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Fine Paper Production High in Fox River

Increased Business Activity and National Defense Needs Step Up Production To About 80 Per Cent — Some Coarse Paper Mills Now Operating Up To 90 Per Cent of Capacity — Other News.

[FROM OUR REGULAR CORRESPONDENT]

APPLETON, Wis., March 17, 1941—Production of fine papers in mills of the Fox River Valley has been stepped up to about 80% of capacity, partially through business received in connection with national defense. Some of this volume covers the needs of governmental departments, and the remainder is reflected in the increased business activity throughout the nation on defense orders, necessitating more paper for correspondence and business forms.

Coarse paper mills likewise are enjoying accelerated operations, and some of them are now up to 90% of capacity. They report a growing volume for the last two years, partially due to the cessation of imports from Scandinavian countries.

No Pulp Shortage Expected

No immediate shortage of pulp is expected, because many of the mills were idling at 40% of capacity or less, and were capable of volume sufficient to meet domestic needs. They have placed idle plants and machinery back into production, and have been able to keep up with the demand.

Although the demand for export business is high, manufacturers are accepting new foreign business only to the extent of their surpluses, refusing to court temporary markets to the disadvantage of their established trade. Mills are more concerned with prompt deliveries because of the lack of rolling stock. Railroads report an increase of 15 to 20% on shipments of both pulp and paper out of the Fox River Valley.

The Fox River Paper Corporation, Appleton, Wis., expects to double its 1940 output of blueprint paper, due to demands from the government and industries engaged in defense production. The mills are running six days per week, with all machines in operation. Its Ravine mill, closed down for several years, is back in production. The company is producing large quantities of government printing office purchases for documents and general business papers.

The Tuttle Press Company, Appleton, Wis., expects to top its 1940 production, which was the largest in its 42-year history. The demand for patriotic crepe paper items has given its sales considerable impetus.

Car Ferry Transports Paper

A full trainload of paper from Wisconsin mills was carried eastward from Manitowoc, Wis., last week by the new speedy and modern car ferry, the City of Midland, on its second voyage. There were 35 cars, each containing about 40,000 pounds of paper, or totalling more than a million pounds of paper and paper products.

The train was assembled by Irwin Pearson, secretary of the Wisconsin Paper Group, Neenah, Wis., which maintains pool car service for all mills in the state. Although shipments came from various mills throughout the state, the bulk of the carloadings were from the Fox River Valley, and were destined for Detroit, Cleveland, Pittsburgh, Baltimore, Washington, Philadelphia, New York, Boston and others.

Prior to departure of the new car ferry, executives from numerous mills went aboard for an inspection tour.

Mr. Pearson points out that the lake route provides Wisconsin mills with the shortest route to the east, and improved service from Wisconsin to eastern markets speeds up delivery and aids manufacturers in meeting competition of manufacturers located much closer to eastern markets.

It is estimated by Mr. Pearson that two full trainloads of paper and products from 70 mills in Wisconsin are shipped each working day to sources outside the state. More than 400 grades and kinds of paper and products are now manufactured in Wisconsin, and the mills have a rated producing capacity of more than a million tons per year.

Fred Kranhold Honored

On St. Patrick's Day, March 17, 1891, Fred Kranhold of Appleton, Wis., took a job with Kimberly-Clark Corporation at its Tioga mill at Ap-

(Continued on page 34)

Reviews History of the Newsprint Industry

Eight Page Pamphlet Recounts 29-Year History of Newsprint Industry In Canada and Concludes That Paper Securities Are Now Most Attractive In Years—No New Mills Foreseen In Near Future

[FROM OUR REGULAR CORRESPONDENT]

MONTREAL, Que., March 17, 1941—Under the title "Canada's Greatest Manufacturing Industry," Wood, Gundy and Company, have issued an eight-page pamphlet giving a 28 year history of the newsprint industry in Canada. In this review the conclusion is drawn that improvement in operating conditions, stronger financial position for the major companies involved and increased earnings, make "securities of newsprint companies present more attractive opportunities for investments than has been the case for many years."

Canada World's Largest Producer

It is pointed out that for many years Canada has produced more newsprint than any other country in the world and has exported more than all other countries combined. This dominant position is the result of a combination of vast water powers and extensive timber lands within easy access of each other,—together with Canada's proximity to the world's largest consuming market, namely, United States, which consumes approximately 45% of the total world newsprint production. This memorandum outlines the development of the industry from 1913 to 1940, during which period the Canadian output of newsprint expanded from 350,000 tons to 3,400,000 tons annually. The value of Canada's newsprint production increased from approximately $15,000,000 in 1913 to over $160,000,000 in 1940."

Newsprint exports, it is further stated, provide Canada with more United States funds than any other single commodity, apart from gold, so that in war time particularly the industry is of vital importance to Canadian economy. In 1940, Canada's exports of newsprint to United States brought into Canada approximately $120,000,000 or more than one-quarter of the total received from United States in payment for all Canadian exports to that country.

It is claimed that periods when rated capacity of Canadian newsprint mills and actual production are close together, have been prosperous periods for the industry. Following a period when actual output was far below rated capacity in the early 1930's, production is now again creeping up on capacity.

Price Averages $61 for 28 Years

Newsprint prices have been stabilized at $50 a ton, f.o.b. New York for the past three years. This compares with a 28-year average price of $61,219. It is maintained that "while newsprint prices have generally followed the commodity price trends, the newsprint price has not yet reflected the sharp rise in commodity prices which began in 1929."

The review concludes with the following summary and outlook:

1. Newsprint consumption is more closely approximating productive capacity so that there is no pressure to cut prices. Increased efficiency in methods of production has steadily improved plants and reduced production costs. Companies with sound mills and reasonably satisfactory management are now able to operate at a comfortable profit.

2. There is no likelihood of new newsprint construction in the near future. The disastrous results of overbuilding in the years from 1926 to 1930 are too well remembered to make it possible for such mistakes to be financed, even if mill operators were again foolish enough to attempt it.

3. Provincial Governments realize more than ever before that the prosperity of the industry is vitally important to the welfare of Canada, and consequently steps have been taken to conserve our limited timber areas so that improvident exploitation of timber will not be permitted in future.

Southern Competition Discounted

4. It is becoming more generally realized that possible competition from newsprint mills manufacturing from Southern pine, which has been a matter of discussion during the last fifteen years, is unlikely to become a serious factor. One newspaper mill operating in the Southern States uses Southern pine (the financing of the mill was based upon Government assistance, but conditions there are so much more suitable for the manufacture of kraft pulp that expansion in this direction has far outrun any development in newsprint manufacture. Because this trend is natural and economically sound it is likely to continue.

Newsprint Expansion Continuous

Production of newsprint in Canada during February 1941 amounted to 245,607 tons and shipments to 239,745 tons, according to the News Print Service Bureau. Production in the United States was 79,720 tons and shipments 81,241 tons, making a total United States and Canadian newsprint production of 325,327 tons and shipments of 320,986 tons. During February, 27,815 tons of newsprint were made in Newfoundland, so that the total North American production for the month amounted to 353,142 tons. Total production in February 1940 was 342,222 tons.

The Canadian mills produced 24,050 tons more in the first two months of 1941 than in the first two months of 1940, which was an increase of five per cent. The output in the United States was 3,263 tons or two per cent more than in the first two months of 1940; in Newfoundland production was 1,100 tons or one and eight-tenths per cent less, making a net increase of 26,213 tons, or three and seven-tenths per cent more than in the first two months of 1940.

Stocks of newsprint paper at the end of February were 176,137 tons at Canadian mills and 16,917 tons at United States mills, making a combined total of 193,054 tons compared with 188,713 tons on January 31, 1941, and 214,364 tons at the end of February 1940. There was some further accumulation of tonnage at points from which water shipments will later be made.

Chicago Reports All Lines of Paper Strong

More Active Demand For Paper and Paper Products Indicated In Optimistic Reports From Midwest Territory — Waste Material Dealers Hold Convention — Salesmen Plan Broader Program.

[FROM OUR REGULAR CORRESPONDENT]

CHICAGO, Ill., March 17, 1941—The Chicago paper market came through the second week in March with optimistic reports coming in from all quarters. All markets are reported as definitely "firm" or "strong" and price increases are indicated by local paper executives as coming in the very near future. Demand broadened out during the week to cover the laggard groups while the general market picked up just about all the remaining slack to make itself ready for upward revisions. Krafts continued to forge ahead with orders plentiful and the understructure very strong. Ground woods and newsprints were firming rapidly as realization of the effects of the war on raw materials came closer and closer to home. A psychological effect resulting from our own Government's restrictions on certain raw materials, is reported to have also helped the firming up in sulphites, bonds and ledgers, specialties and building papers in particular. Waste papers were likewise firm and following tightly to the price schedule which developed around the first of March.

Waste Material Dealers Hold Meeting

The twenty-eighth annual convention of the National Association of Waste Material Dealers, Inc., will get underway Monday, March 17, at the Hotel Sherman in Chicago. Still awaiting word from members of the National Defense Commission as to participation in the three day session, the Association has, nevertheless, completed a well rounded out program including the appearance of Clifton Utley, director of the Chicago Council on Foreign Relations, as the principal speaker. Opening sessions get under way at 2:30 p.m., on the 17th. Meetings on the following day will bring together the members of the Secondary Metal Institute at 10 a.m., the Waste Paper Institute at 2 p.m., on the same afternoon and the board of directors in the evening. The Associated Rag Industries will meet on Wednesday morning as will the Scrap Rubber Institute. The meeting of the entire association will be held at 2 p.m. on the final day. Chicago waste paper dealers are arranging entertainment and speaking talent for the Waste Paper Institute proceedings on Tuesday afternoon.

Begin Another Round in Carton Fight

Just when Mr. and Mrs. Consumer thought it was all over—this battle over paper milk cartons—the City of Chicago this week filed with the United States Circuit Court of Appeals for an appeal from an October decision handed down from Judge Woodward. The appeal granted a Chicago dairy an injunction restraining the city from interfering with the sale of milk in paper bottles. Judge Woodward's decision overruled a recommendation of Master in Chancery Grossman. The appeal filed by the Corporation Counsel Hodes contends that the judge failed to find Master Grossman's report "clearly erroneous" and contends that paper cartons are not "bottles" which "must be made of glass." The action is the latest step in the five year fight which has been fought through the city council, the board of health, and the state and federal courts. A suit was first filed charging that the city ordinance which the city construed to ban paper bottles was discriminatory and thus unconstitutional.

Try to Escape Unjust Tax

The efforts of Illinois sales taxpayers to get some legislative relief by eliminating the "tax on the tax" feature of the act is attracting widespread attention from all those who, by selling to the ultimate consumer, are under this 3 per cent imposition. The amendment introduced by retailing but applicable to many within the local paper industry, sets a base of 97% of the gross receipts rather than 3% of the entire gross receipts, thus permitting an actual tax on gross receipts of 3%. The bill is S.B.113, in the Senate Revenue Committee. It is expected that it will be reported out favorably next week.

Salesmen Plan Broader Program

The western division of the Salesmen's Association of the Paper Industry spent a good part of the time at its Monday, March 10 meeting, discussing future procedure of the organization. Courtney Reeves, head of the group, indicated that a committee probably would be appointed to study the possibilities of taking more active and direct participation in the Fall meetings of the National Paper Trade Association, held in Chicago in October. The Association also discussed the possibility of securing outside speakers for some of the regular Monday meetings which have, for some time now, been entirely devoted to round table discussions on business and procedure matters. Both suggestions are in the preliminary stage but indicate a willingness on the part of this active group to broaden its scope.

Plan Help to Small Concerns

Paper suppliers in this area are expected to benefit by the activities of the Chicago Commission on National Defense, a commission with offices at 33 N. LaSalle street and manned by appointees of Mayor Edward Kelly. The commission has asked all local business concerns interested in defense activities to write to the commission reporting kinds of materials which they are able to supply. The Commission's program, according to local reports, is to stimulate prospects for the securing of defense business by smaller industries who cannot afford the contacts developed by larger concerns.

San-Nap-Pak Profits Off

The San-Nap-Pak Manufacturing Company, Inc., for 1940 reports a net profit of $140,836, compared with 1939 net profit of $189,373. Annual stockholders' meeting will be held on March 25.

Policy of Paper Industry Under Criticism

Liberal Member For Port Arthur District Attacks Policy of Ontario Government and Holds It Responsible For Retarding Progress of Paper and Pulp Manufacture — Investigation Requested.

[FROM OUR REGULAR CORRESPONDENT]

TORONTO, Ont., March 17, 1941—The Ontario government's policy respecting the pulp and paper industry came in for some severe criticism in the legislative assembly this week when Charles W. Cox, liberal member for Port Arthur charged that "political chicanery" was responsible for the doldrums in which the industry finds itself.

"The present policy is ruinous to the district I represent and will have a far reaching and detrimental effect on the province and the Dominion," Mr. Cox said.

"Under agreements made by previous administrations, contracts invariably never were carried out or enforced, but there was at least a camouflaged effort to have the timber manufactured in Canada," he said. "But agreements during the past few years clearly indicate that to a great extent benefits of our timber resources are being handed out to those of another country."

Conduct of Forest Department Criticized

Mr. Cox alleged that the department of lands and forests entered "tricky agreements which threw a thin veil over the intent and purposes," and that "Hydro was used as a political tool by exploiters" and that timber limits had been granted to persons who knew nothing of the timber industry. The department, he said, had made an agreement with the Sault Pulp Products Company granting them 2,300 square miles of timber. The company was to build a mill. No mill was built, he claimed.

"During the past few years," Mr. Cox continued, "I estimate that we have highgraded timber stands along 300 miles of river and lake shore line, never conducting operations more than a mile or so from the shore.

"War works contemplated at the head of the lakes this summer will give work to 12,000 men, said Mr. Cox. "It must be obvious," he added, "we do not want any men in the woods this summer, highgrading the forest resources when they could be doing other useful work."

Independent Investigation Requested

The Port Arthur member wanted an independent investigating committee appointed and declared that many operators were afraid to testify at the recent timber probe "for fear of reprisals" and demanded an "impartial" investigation into the administration by the department of lands and forests of the province's forest resources.

"The wrath of a scorned and disgruntled politician," commented Hon. Peter Heenan, minister of lands and forests, in reply to the member for Port Arthur. For more than an hour the minister lashed out at Mr. Cox, during which he said that he was "the one man most responsible for hampering development of the province's timber resources." The minister produced telegrams, letters, and newspaper clippings which he offered as evidence that Cox had approved everything he now condemned.

Minister of Lands Comments on Charges

The minister quoted newspaper reports of speeches by Mr. Cox taking credit for the Lake Sulphite mill "but now it's bankrupt it was the minister did it all." He read a letter from R. O. Sweezy of Sulphite, to Mr. Cox, indicating Cox was a moving spirit in getting the mill established.

Cox was "disgruntled," the minister said, "because he wanted the patronage of the whole northwestern part of the province. He wanted it so that anybody cutting pulp would have to go to him." He cited areas which he said had been "exploited and despoiled" by Cox as a timber operator. Twice, he alleged, the Port Arthur member outbid established mills for timber limits, paid a deposit and promised to build a mill, but never did.

Leopold Macauley (Con., York, South) added a fillip to the discussion by asking if it was not true that after Hon. Peter Heenan had written Premier Hepburn setting forth Mr. Cox's alleged shortcomings, the premier endorsed Mr. Cox as Mayor of Port Arthur. The minister replied that a man might be a good mayor and a poor legislator.

Work of the Import Committee

A new national procedure affecting envelopes used as containers for foreign merchandise has been put into effect by Customs officials according to the Import Committee of the American Paper Industry. While the new ruling will not increase the production of American envelopes, it will be an added burden, though slight, upon the importers of various types of merchandise. Under this ruling dutiable goods will be classified for duty at the value of the imported merchandise, but an additional duty will be levied on the envelopes containing such merchandise. For instance, there has been a market developed by the Japanese for needle books with large-eyed needles for use of American soldiers and sailors. Under the new policy duty will be collected upon the needle books themselves, an additional duty on the envelopes, the amount of such duty depending upon the grade of paper used and the nature of the printing. In the case of the Japanese needle books duty will be collected on the envelopes at the rate for glassine paper of 3 cents per pound and 15 per cent plus 5 per cent for printing and conversion into envelopes.

Globular greaseproof imitation parchment, embossed to protect candies and crackers, classified for duty as embossed decorated wrapping paper at 4½ cents per pound and 20 per cent has been held by the United States Customs Court to be greaseproof paper, dutiable at 3 cents per pound and 15 per cent, being made of greaseproof paper, though the embossing rendered the paper not greaseproof for ordinary oily liquids at points where the surface was broken by the embossing.

Good Engineering in This Paper Plant

by F. J. Vonachen

The following data was secured in the survey of a steam engine driving stokers in a large paper mill. The power cost is less than ½ cent per Kilowatt-hour, 0.47 cents to be exact, an exceedingly low power cost, 67% cheaper than the other power considered.

Survey of Steam Engine Driving Stoker in Paper Plant

Data:
Engine—4¼ x 5 ST
Maximum BHP—6.3 at 450 RPM
Average BHP—5 at 357 RPM
Hours operation per year—6000
Steam pressure—160 lbs. g.
Superheat—0 deg. F
Back pressure—5 lbs. g.
Feed water temperature—220 deg. F (assumed)
Cost of steam—32 cents per 1000 lbs.
Cost of engine installed—$508
Cost of motor installed—$465
Extra labor to operate engine—None
Purchased current cost including demand charges—1¼c per KwH.
Part of engine exhaust used for heating and processing—100%
Has operation of engine been satisfactory—Yes

Annual Engine Cost:	
Depreciation—5% of $508	$ 25.40
Average interest at 6%—$508 x .0315	16.00
Maintenance—2% of $508	10.16
Steam consumption for average load of 5 BHP is 263 lbs. per hour	
Calculated heat left in exhaust is 92.6%	
Calculated heat chargeable to engine is 7.4%	
Steam cost chargeable to engine is	37.30
Lubrication cost	34.14
Extra labor	None
Total	$123.00
Annual Motor Cost:	
Depreciation—5% of $465	$ 23.25
Average interest at 6%—$465 x .0315	14.63
Maintenance—2% of $465	9.30
Current cost—26,350 KwH. @ 1¼c	329.00
Lubrication cost	.57
Extra labor	None
Total	$376.75
Annual Saving:	
$376.75 — $123.00	$253.75
Power Cost at Stoker Shaft:	
Engine	0.47 cents per KwH.
Motor	1.43 cents per KwH.

Engine power is 67% cheaper.

This will pay for extra cost of engine in less than 3 months and give a yearly return on the extra investment of 590%. It will pay for the entire engine cost in 2 years.

To obtain low plant operating cost, it is necessary to have good plant heat balance and the same steam should be made to do double duty, namely, generate power and produce heat. If the amount of power and heat produced is just sufficient for the requirements, there is perfect heat balance. Perfect heat balance is difficult to obtain in practice but to obtain the best heat balance and lowest operating cost, it is essential to work as close to the perfect heat balance as possible.

Steam May be Made to do Double Duty

Steam can be made to do double duty by passing it through a prime mover and using the exhaust for heating and processing in place of live steam. That type of prime mover should be selected which will give the required power and at the same time an amount of exhaust steam that will not be excessive for the heating or processing load.

That type of prime mover should be selected which will give the proper heat balance, even with high back pressure, which is sometimes necessary to obtain high temperature in the process. That type of prime mover should also be selected which has the best mechanical characteristics for driving the type of driven machine that is to be used. The modern steam engine was selected in these cases because of its wide, smooth, flexible, easily adjusted speed range with infinitely small steps and because of the ease with which it is connected to and operated by automatic control. The driver should be a machine which is simple and reliable and which requires the minimum of maintenance. It should be a machine that can be controlled easily and operated even by inexperienced workmen.

Steam Free from Cylinder Oil

Since some processes require steam free from cylinder oil, it will be well to mention that if the steam engine fills the bill otherwise, it can be secured for operation without oil lubrication in the cylinder so that the exhaust will be oil-free. The cylinder can be properly constructed and glazed by the use of beeswax and graphite and it can be operated without any lubrication except possibly the introduction of a slight amount of beeswax and graphite at infrequent intervals. In normal operation, the condensate acts as the lubricant on the glazed surfaces. A solution of colloidal graphite and distilled water introduced into the cylinder by a special mechanical cylinder lubricator can also be used. The graphite concentration is so low that it does not interfere with processing or heating, even when in direct contact with the steam. Its effect on boiler operation is considered advantageous.

A Distinct Advantage

Some plants may be running their boilers at low pressure and using the steam only for heating and processing. These boilers will usually produce steam at a sufficiently high pressure to operate a steam prime mover at only slightly higher cost, since most of the heat generated in the boiler changes water into steam and as the amount of heat necessary to raise the steam pressure is relatively small. It is a distinct advantage to make this steam do double duty and to obtain the resulting low cost by-product power.

Ideal "S-O-S" Motor Pulley

The Ideal Commutator Dresser Company, 1517 Park avenue, Sycamore, Ill., announces a new variable speed pulley designed for light, inexpensive machinery. The pulley mounts directly on the motor shaft and requires only standard V-belts.

Features include short over-hang, forced lubrication, balanced sheave and all metal construction. Both halves of sheave move giving accurate belt alignment at all times. The pulley faces are curved so that the belt has full contact at all pitch diameters. Speed ratios up to 2¾ to 1 available. Sizes up to ¾ H.P.

Complete unit includes variable pitch pulley and adjustable sliding motor base. By turning the handwheel of the base, the motor moves backward or forward causing an increase or decrease in belt tension. This causes the pulley to open and close, changing the pitch diameter and the driven speeds. Sped changes are made while the drive is running.

Obituary

Frank E. Vincent

Frank E. Vincent, 74, for a considerable period the head of the Vincent Paper Company, Lynn, Mass., until his retirement eight years ago, and previously for many years with the Hoague Sprague Corporation in an executive capacity, died of a heart attack while shovelling snow outside his residence at 50 Harrison avenue, Swampscott, Mass. He was widely and favorably known in the trade. A widow, Mrs. Emma Vincent, and a son, George, both of Swampscott, are living.

Edward E. Dore

Edward E. Dore, 70, who had been active in railroad and industrial management, died March 13 in St. Elizabeth's hospital, Chicago, Ill. Born in Limerick, Ireland, Mr. Dore became president of the old Chicago, Peoria, and Western railroad, and its subsidiaries. He also served as general manager of the Chicago Lighterage Company and was former traffic manager of the Stein Hall Manufacturing Company. He was a member of the Chicago Traffic Club. Surviving are his widow, Anna; three daughters and two sons.

Frederick Stutzman

Frederick Stutzman, former president of the Holland Paper Company of Buffalo, N. Y., died March 9 in a hospital at Fort Erie, Ont., Canada, after suffering a stroke in his summer home here a few hours before. His age was 72. He was born in Buffalo and for fifty years until his retirement two years ago was connected with the Holland Paper Company.

Traffic Management

Robert V. O'Brien, traffic manager of Westfield River Paper Company of Russell, Mass., and Mountain Mill Paper Company of Lee, Mass., is giving a course in "Industrial traffic management" under the auspices of the state department of university extension in the Commerce High School, Springfield, Mass.

One lesson will be given each week for eight weeks. The course will cover such matters as industrial shipping, receiving, claims, practices, classification, construction and interpretation of tariffs, rail and motor rate structure, interstate commerce, procedure before rate and classification committees and before the Interstate Commerce commission.

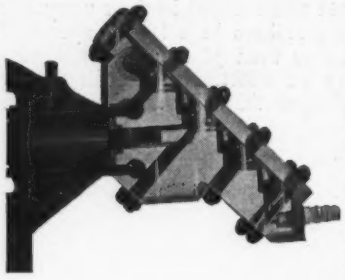
Mr. O'Brien has been in the transportation business for 25 years and has instructed the above course for several years. He is considered one of the most capable transportation experts in New England and has had wide and varied experience in this line. Mr. O'Brien has appeared numerous times before rate and regulatory bodies and as a registered practitioner before the Interstate Commerce commission.

Rhinelander Profits Up

The Rhinelander Paper Company for 1940 reports a net income of $305,841, equal to $2.04 a share on 150,000 capital shares, against $272,456 or $1.82 a share the year before.

Pump of Transparent Plastic

A transparent plastic pump for handling dilute acids, hypochlorites and many other chemicals, is being marketed by Milton Roy, 1356 E. Mermaid Avenue, Philadelphia.



Machined from a solid block of Plexiglas, a crystal-clear plastic material, the unique feature of this pump is the visibility, at all times, of the flow of liquid being pumped, and the movement of the valve checks and pump piston.

Added advantage of the plastic used is its natural resistance to chemical attack. The inlet and outlet hose nipples are also of plastic construction. The piston is Hastelloy "C".

The valve contains all the characteristics and advantages of the standard step-type valve, a feature of Milton Roy chemical pumps. Ready accessibility is provided by a flat-plate cover which, when removed, permits cleaning of the complete valve assembly without disturbing pipe connections to the pump.

The pump shown has a capacity of 18 g.p.h. against a maximum discharge pressure of 150 lbs. per square inch and is driven by a 1/6 hp. integral-gear motor. Other pumps are available in capacities of from one-half to 20 gallons per hour.

New Book on Temperature

Temperature, Its Measurement and Control in Science and Industry, a 1300-page book has recently been issued under the auspices of the American Institute of Physics with the cooperation of the National Bureau of Standards and the National Research Council together with a number of other scientific organizations. The Reinhold Publishing Company, New York, N. Y., is the publisher. It contains 550 illustrations.

This book is based on a symposium with the following purposes in view: (1) coordination of the treatment of the subject of temperature in several branches of science and engineering, (2) review of the fundamental principles and a recapitulation of recent progress, and (3) emphasis on the importance of temperature as a branch of physics.

Among the important chapters are the following: Temperature and Temperature Scales, Precision Thermometry, Automatic Temperature Regulation and Recording, Special Applications and Methods, General Engineering, Optical and Radiation Pyrometry, and Thermometric Metals and Alloys. Each chapter contains running captions specifically referring to the information appearing on each page. Valuable appendices are included.

The Institute of Physics has performed a valuable service in arranging for the preparation of this very informative book. Copies may be obtained at $11.00 per copy from the Book Department of the Technical Association of the Pulp and Paper Industry, 122 East 42nd street, New York, N. Y.

Mrs. H. W. Mason Heads Curtis Co.

The annual stockholders meeting of the Curtis Paper Company was held Friday, February 21, 1941 at the office of the company, Newark, Del., at which time an entirely new board of directors was named with the exception of Mrs. Herbert W. Mason who was re-elected. At a director's meeting immediately following, Mrs. Herbert W. Mason was elected president and treasurer. Mrs. Mason has been actively engaged in the affairs of the firm since the death of her husband, Herbert W. Mason, about a year and a half ago. The directors and officers are as follows:

Mrs. Herbert W. Mason, president and treasurer; Hayward Beatty, vice-president; George K. Landon, vice-president and secretary; Charles B. McCoy, Charles L. Reese, Jr.

Mrs. Mason, president and general manager, announces the appointment of Hayward Beatty, formerly of George W. Millar & Co. and of American Writing Paper Corporation, as sales manager, and George K. Landon, chemical engineer with many years experience in paper making and other cellulose products, as plant manager.

The retiring president, Charles M. Levis, was elected honorary chairman of the board of Curtis Paper Company. Mr. Levis has been active in the paper industry for more than 60 years and he has been connected with the Curtis Paper Company in various capacities since 1898. Before coming to Newark he was a member of the firm of Magarge & Green, paper manufacturers of Philadelphia. Mr. Levis has been ill at his home in Wilmington for the past four months. Eugene Brothers, for fourteen years with the Curtis mill as superintendent continues in this important post in which he has become so well known and in which he has made such an enviable reputation. The Curtis Paper Company is one of Delaware's oldest industries and has been making fine papers since 1848.

Analyzing T. & H. Calendar

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., March 17, 1941—A meeting for analysis of the Tileston & Hollingsworth Calendar was held at the Highland Hotel, Springfield, Mass., Saturday evening, sponsored by the Connecticut Valley Club of Printing House Craftsmen. On Tuesday evening, March 18, there was an analysis at the Rex Penthouse, Lowell, Mass., sponsored by the Merrimac Valley Club of Printing House Craftsmen. One will be held Friday evening, March 21 at the Augusta House, Augusta, Me., for the Maine printers. George Trenholm was the analyst.

Hands Down Decision on Pulp Rates

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., March 17, 1941—Interstate Commerce Commission has just handed down a decision in connection with wood pulp rates.

In their syllabus in the decision, the Commission says: "Authority granted on conditions to establish and maintain a rate of not less than 31.5 cents per 100 pounds on wood pulp, in carloads, from Fernandina, Fla., to Orange, Tex., without observing the long-and-short-haul provision of section 4 of the Interstate Commerce Act."

Laminating with Cellulose Acetate

Process of laminating paper with cellulose acetate sheeting developed at the Bureau of Standards for the protection of documentary material is now being extensively practiced, the Department of Commerce states. The Bureau, it is pointed out, recently completed an investigation of the quality of sheetings employed by different operators, together with the efficacy of their processes, and the results are embodied in a report now available for distribution.

Identical papers representing the types generally used for documents were sent to six commercial concerns and the National Archives of the United States, which laminated the papers with sheeting and returned them, together with samples of the sheeting used, to the Bureau for test. It was found that three of the operators used plain sheeting and applied it to the papers with heat and pressure, one used sheeting coated with an adhesive and also applied it with heat and pressure, and the others used sheeting containing an adhesive but applied it with pressure only. The products of three manufacturers were represented.

The sheetings were tested for chemical and physical properties which are related to laminating quality, resistance to wear, and stability. They were all found to be satisfactory. They had high strength and were apparently as stable as the best grade of papers made for permanent records.

The workmanship of the laminated papers was good. The sheetings were applied smoothly and they could not be removed without splitting the papers, the stability of which had not been adversely affected. To test the permanence of bond between the sheetings and the papers, the samples were subjected to extreme changes in moisture content and were baked at a high temperature. The bond of nearly all of them remained intact under the varied changes in moisture content. When heated for 72 hours to 100° C. (212 deg. F.) many of the samples displayed a loosening of the bond, but the fact that many others were unaffected by this severe treatment is evidence that a remarkably high degree of stability of the bond can be attained. Although the sheeting in several instances yellowed somewhat under the heat test, in the majority of cases no effect was discovered.

In addition to its strength and stability, the acetate sheeting is highly transparent, thin, easily cleaned with water, and resistant to insects. Furthermore, the laminating process is speedy and gives excellent service in the mending of documents.

Turkey Completes Second Pulp Mill

The second paper and pulp mill under construction at Izmit, Turkey, has now been completed. The productive capacity of another paper and board factory has recently been raised from 500 metric tons to 8,400 metric tons, and will shortly be brought up to a productive capacity of 12,000 metric tons annually. Thus the two paper mills at Izmit will produce between them 24,000 metric tons annually, which represents the approximate annual consumption in Turkey. The chemical pulp mill will produce about 17,000 metric tons, which will be sufficient for the needs of the two paper mills at the present time. In the past Germany has been the principal source of supply for paper and paper products in Turkey, followed by Finland and Norway.

To Study Pulp Situation

The Association of Pulp Consumers, Inc., 716 Mills Building, Washington, D. C., has started a study of the probable supply and demand of wood pulp for 1941 and 1942, as it affects the mills which use purchased pulp. Commenting on the need for the study, C. V. Maudlin, an economist of Washington, D. C., who in the past has made studies of the pulp situation and is in charge of this one, said:

"There are available several studies of one kind or another covering the wood pulp situation for 1941, in an over-all way. The problem has been approached from different angles but none of the studies that have come to my attention analyze the situation from the viewpoint of the mills which use purchased pulp.

"A general statement that the United States and Canada can produce all the wood pulp required to meet the needs of the United States paper mills is much the same as saying that the United States has sufficient pasture land to produce the amount of milk required to supply each person with sufficient milk for his well being. While this can be shown statistically, it is well known that there are thousands of persons who are not today receiving the milk required, even though the Government has stepped in and made milk available at a low price in many localities.

"A study made under my direction about 18 months ago showed that the paper mills which used purchased wood pulp required, at that time, approximately three million tons of wood pulp annually and that there was available to them less than one million tons annually from the United States pulp mills which produced wood pulp principally for sale. The balance of their requirements had to be met by imported wood pulp and the surplus production of the self-contained mills, which were competing with them in the sale of paper. The situation at that time was serious but now that the imports from Europe are shut off, and the large inventories of European pulp in this country are about depleted, the situation is acute and growing steadily worse.

"Factors such as whether the plants which have a surplus capacity for manufacturing wood pulp have facilities for drying and shipping it, the amount of paper production which is currently being shifted from the pulp purchasing mills to the self-contained mills which produce their own pulp requirements, the availability to the mills purchasing pulp of certain special grades of pulp, the large increase in the exports of wood pulp from the United States, and similar relevant matters will be thoroughly studied and reported to the members of the association."

Paper and Cordage Men to Meet

PHILADELPHIA, Pa., March 17, 1941—The Philadelphia Paper and Cordage Association will hold its regular monthly luncheon meeting in the Emerald Room of Adelphia Hotel on Friday, March 21 at 12:30 P.M. As an added attraction there will be a newsreel presented showing how the world series baseball was won from the bench. "Red" Baker, who broadcast the last world's series, will do the narrating, and will give first-hand information on the inside of baseball. A questionnaire has been mailed out by president Jack Shinners, in an effort to determine the preferences of members in the matter of curricular activities of the Association.

Scott Paper Profits $2.43 Share

[FROM OUR REGULAR CORRESPONDENT]

PHILADELPHIA, Pa., March 17, 1941—In releasing the "Stockholders News" on Thursday last to shareholders of the company, Thomas B. McCabe, president of Scott Paper Company, made the following announcement: "Based on computations by its independent auditors, net earnings of Scott Paper Company, Chester, Pa., for the year ended December 31, 1940 will be increased by approximately $140,000 equivalent to 21 cents per common share as a result of the amendments to the Excess Profits Tax Act which were enacted on March 7, 1941, and which are retroactive for the year 1940." On the basis of this estimate, earnings for the year ended December 31, 1940, calculated on the 667,941 common shares outstanding on that date, were approximately $2.43 per share as originally set forth in the company's annual report dated February 14, 1941. On a comparable basis earnings reported for 1939 amounted to $2.60 per share.

Lieut. Col. Reed Enters Active Service

By an order of the War Department, dated March 5, 1941, Lieutenant Colonel Leo. B. Reed, who for the past seven years has been manager of the Credit Department of Geo. W. Millar & Co., Inc., 284 Lafayette street, New York City, has been ordered into active duty with the United States Army.

He was ordered to report on March 15, 1941, at Governors Island, New York, for duty with Headquarters, First Army, commanded by Lieutenant General, Hugh A. Drum, in the position of Assistant Inspector General.

During Colonel Reed's absence, his position with the Millar firm has been taken over by Harold G. Kendall, who for many years occupied a similar position with Starrett & Van Vleck, nationally known architects, 267 Fifth Avenue, New York City.

E. A. Charlton Resigns From Crossett

A press report from Crossett, Ark., states that "W. E. R. Covell, general manager of the Crossett, Arkansas, Companies, announced that his Board of Directors had accepted the resignation of E. A. Charlton, who has managed the Crossett Paper Mills, a division of the Crossett Lumber Company, since May, 1938.

"Mr. Charlton is an outstanding figure in the paper industry. Officials of the Crossett Companies expressed regret that Charlton is severing his connection with the organization. His successor has not been appointed."

Mr. Charlton for a long number of years was formerly vice-president and manager of manufacturing of the International Paper Company, New York.

Scott Introduces New Brand

[FROM OUR REGULAR CORRESPONDENT]

PHILADELPHIA, Pa., March 17, 1941—After many months of experimentation and consumer research, Scott Paper Company is placing on the market a facial-quality double sheet toilet tissue featuring super-softness plus two-way strength. This newest of Scott products will be known as "Soft-Weve" and will take its place alongside of Waldorf and Scot Tissue, the company's present brands of toilet tissues.

Therefore, sometime ago, Beloit engineers redesigned the Beloit shake, using the same principal but totally enclosing it and eliminating the shake shaft. The use of individual compact shake heads makes it possible to vary the pattern of the shake on the wire to obtain the best sheet.

On many high speed machines we have used as many as four individual units. On smaller slow speed machines, one sufficed. . . . The ABC of good formation is a sharp, jerky high speed shake and a light, sturdy fourdrinier. . . . Athough new, the Beloit shake is in no way experimental. We have built over 50 in the past year and would like to tell you more about the many patented features of this unit.

BELOIT IRON WORKS PAPER MACH'Y BELOIT, WIS. U.S.A.

Engineering MAKES THE MACHINE **BELOIT**

New Literature

Direct current motors and generators are described in Leaflet B-6131, issued by the Allis-Chalmers Manufacturing Company, Milwaukee, Wis. It covers the company's "Lo-Maintenance Type E" equipment, for ratings up to 200 hp. and 150 kw.

Industrial products are described in booklet Form G 1-6A, issued by Johns-Manville, 22 East 40th street, New York. The booklet contains much information on high and low temperature insulations for many industrial needs, from 400 degrees F. below zero, to 2500 degrees F. above. Specifications and complete data on J-M products are included.

Pumps and pumping equipment is discussed in an industrial catalogue issued by Goulds Pumps, Inc., Senaca Falls, N. Y. It contains in sectionalized form complete bulletins on various types of centrifugal, reciprocating, and rotary pumps, sump pumps, condensate return units and miscellaneous units.

Acme Process News, No. 2 issue, published by the Acme Steel Company, 2840 Archer avenue, Chicago, Ill., describes various applications of the new Acme type N-1 stretcher, for steel strapping many products for shipments, such as cartons, bales of pulp, etc., with speed and with minimum effort.

Asplit and Causplit cements, is the title of a booklet issued by the Pennsylvania Salt Manufacturing Company, 1000 Widener building, Philadelphia, Pa. It announces the company's new "Causplit" cement, which is unattacked by akaline conditions and also resistant to some acid conditions which attack the company's well known Asplit cement.

Horizontal return tubular boilers are discussed in a catalogue issued by the Combustion Engineering Company, 200 Madison avenue, New York. The publication gives full details of the design and construction of these units, with setting drawings, tables of dimensions and installations with different methods of firing.

Spiral bevel and hypoid drives are described in Bulletin No. 127-B, issued by the Shartle Brothers Machine Company, Division of the Black-Clawson Company, Middletown, Ohio. Six different types in 34 different sizes, built for strength and vibrationless operation, are available.

Microorganism control in the pulp and paper industry is the subject of Technical Bulletin 0-5, issued by the Monsanto Chemical Company, St. Louis, Mo. It discusses the applications of Santobrite for slime control, preservation of stored pulp lap, prevention of felt rotting and other uses for Santobrite.

Remote transmission recording and controlling, is discussed in Catalogue No. 9400, issued by the Brown Instrument Company, Wayne, Roberts avenues, Philadelphia, Pa. It describes the company's New-Matic system and supplies information on the applications of these instruments, gives operating features and describes the principal working parts.

Copper and brass utilization in the paper industry, is included in the February, 1941, Bulletin of the Copper and Brass Research Association, 420 Lexington avenue, New York. It portrays the paper industry as an important user of copper and its alloys.

Cellulose acetate, is the subject of a new booklet issued by the Hercules Powder Company, Wilmington, Del. It gives data on properties, application and formulation of the material in the paper and other fields.

Plunger stuff pumps, and centrifugal pumps, in vertical and horizontal types, are described in Section 121 Pumps, issued by the Downington Manufacturing Company, Downingtown, Pa. It supplies performance characteristics, dimensions and weights, and data on stuff pumping.

Distribution transformers are described in Bulletin B-6125, issued by the Allis-Chalmers Manufacturing Company, Milwaukee, Wis. It covers sizes from 37½ kva to 200 kva, designed for standard voltages from 2400 to 69000 volts and includes construction features and dimension sheets.

New Proportioning Equipment

D. W. Haering & Co., Inc., 2308 South Winchester avenue, Chicago, Ill., announce the publication of a new 8-page bulletin describing the latest developments in proportioning and sampling equipment. Construction, operation and application of the new and improved Nelson Chemical Proportioning Pump are discussed. This is the synchronized drive chemical pump which has gained wide favor in the solution of proportioning problems in the petroleum and water conditioning industries. This latest design in proportioning pumps has widened the scope of application to all industries where reciprocating pumps are used in processes requiring proportioning. Dependent only upon the pressure surges developed by a master reciprocating pump, this pump is otherwise entirely self-contained. Complete dimensions, capacities and operating data, together with a thorough discussion of the unique Nelson valve and packing construction are presented.

The fluid piston principle, basis of the popular model "B" feeder and all Haering proportioning and sampling machines is explained and thoroughly discussed with reference to design, construction and operation of these machines. Haering feeders have received wide acceptance for proportioning chemicals in a variety of industries, including the fields of corrective water treatment, chemical, petroleum and general processing. The latest improvements in the design of these machines are discussed, pointing to increased operating efficiencies, convenience and general utility. This well printed bulletin, profusely illustrated with diagrams, installation photographs and tables, presents the subject in a complete, concise and orderly fashion.

Gives Bearings Tight Press Fit

A novel method has been developed for heating bearing cones preparatory to assembling them on shafts where a tight press fit is required. This device consists of three trays about 4 feet square, approximately 12 inches above each other. The middle tray is of pyrex glass while the top and bottom trays each carry seven 250-Watt special infra-red ray bulbs. The reflectors on these special bulbs are gold-plated.

Bearing cones are not taken out of the boxes, but are stacked in their containers. About 20 minutes are required to heat a bearing up to maximum of 155 deg. F. The infra-red rays penetrate the boxes, heat the steel, but leave the cardboard relatively cold.

When this method of heating is used, it is not necessary to wash off the protective coating which is put on the bearings at the time of packing. Additional information may be obtained from the Timken Roller Bearing Company, Canton, Ohio.

Quick Relief from "Pumping Grief"

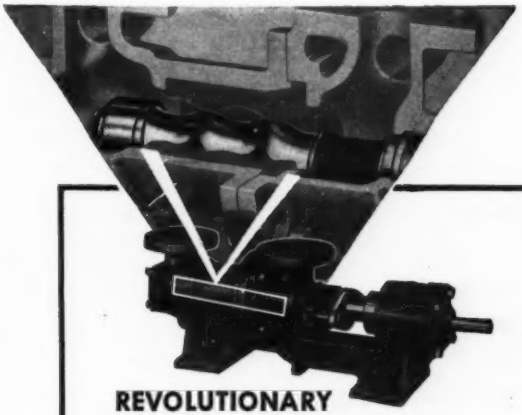
"We aren't getting production, Watkins. Where's the bottleneck?"
"It's the pumps. Just won't stand up. We'd better look at this new R&M Moyno."

with the R & M MOYNO PUMP

You can eliminate "pumping headaches" . . . stop costly delays . . . protect the quality of your product by installing R & M Moyno Pumps.

The R & M Moyno Pump has a successful service record in dozens of leading paper mills. It is valveless . . . self-priming . . . positive in displacement . . . delivers a steady, even discharge with minimum turbulence. It will handle size and stock, even paper coating up to 53% solids, smoothly and uniformly. There are no oily or exposed surfaces to contaminate the liquid. Working parts are few and simple, requiring only a few minutes for replacements or repairs—if necessary.

Let an R & M pump expert analyze *your* problem. He may help save you thousands of dollars. Write today for Folder No. 1777 for complete details on the R & M Moyno Pump.



REVOLUTIONARY MOYNO PRINCIPLE

The secret of the efficient, trouble-free performance of the R & M Moyno Pump is in the pumping action of the helical rotor and stator. Action is like that of a piston moving in one direction through a cylinder of infinite length.

ROBBINS & MYERS, Inc.

MOYNO PUMP DIVISION SPRINGFIELD, OHIO

HOISTS • CRANES • MOTORS • FANS • FOUNDED 1878

WE BROKE WITH TRADITION...

TRI CLAD
INDUCTION MOTOR

Gives extra protection 3 ways

1 *Extra Protection*

AGAINST PHYSICAL DAMAGE

One-piece cast-iron frame and cast-iron end shields protect the vital parts — from external blows, falling objects, or dripping liquids—keep them safe and secure even under slam-bang conditions. The entire stator frame, including integrally cast feet, is built to give all-round strength without excess weight.

...TO BUILD THIS NEW MOTOR

2 Extra Protection

AGAINST ELECTRICAL BREAKDOWN

Stator winding of Formex* wire—the toughest magnet wire ever developed—gives extra protection against moisture, oil, abrasion, and heat-aging. New synthetic-resin bonding varnish and Glyptal No. 1201 Red on end windings make a sturdy unit with a durable finish. You get a motor you can count on for continuous service year after year.

*Reg. U.S. Pat. Off.

3 Extra Protection

AGAINST OPERATING WEAR AND TEAR

Sleeve bearings are of new design—have a scientifically determined length and diameter and a method of grooving that assures a continuous oil film over the entire bearing surface. A new and simple ball-bearing mounting assures correct alignment and exclusion of foreign materials—bearings can be cleaned and greased without disassembling.

OUR field studies had shown that, more and more, the requirements of industry were demanding a vastly improved general-purpose motor, and it was apparent that this demanded a radically new approach on the part of the designer. Similarly, design studies showed that only by making a fresh start could full advantage be taken of the materials and methods that were newly available. Only by matching up *all* the new wants and *all* the new ways of doing things, in a supreme effort to make a *long jump* ahead—instead of the traditional *step* ahead—was it possible to achieve the truly modern motor you asked for.

And now you have the Tri-Clad motor—a completely new design. More than 15 important improvements have been built into it. And for the reason that so many major improvements were concentrated in one design, we had to have just that much more assurance that each one was thoroughly practical. Never before, we believe, has the manufacturer required a motor to prove itself so thoroughly in advance of initial sale.

Whatever the task you have for a general-purpose motor—whatever your special concern for appearance, convenience, quietness, *or* protection—you will find that the performance-tested features of the Tri-Clad motor will give you specific benefits on the job. General Electric, Schenectady, N. Y.

Integral-hp sizes up to 20 hp (at 3600 rpm), open and splashproof, are now available. Also capacitor motors up to 5 hp (at 3600 rpm).

BUILT FOR PROTECTION FIRST . . . TO LAST

Government Paper Bids and Awards

WASHINGTON, D. C., March 19, 1941—Mudge Paper Company has been awarded the contract for furnishing the Government Printing Office with 14,400 pounds (300,000 sheets) of 17 x 22, 100% rag, white bond paper at 19.39 cents. The same firm will also furnish 2,000 sheets of 24 x 36 Quaker drab cloth lined cover paper at $148.18 per M sheets. Bids for both of these items were received on February 26.

Printing Office has received the following bids for 73,000 pounds (600,000 sheets) of 28 x 34 white sulphite writing paper; Whitaker Paper Company, 5.59 cents; Mudge Paper Company, 6.22 cents; Old Dominion Paper Company, 5.6399 cents; Perkins-Goodwin Company, 5.9 cents; R. P. Andrews Paper Company, 5.46 cents; Barton, Duer & Koch Paper Company, 5.72 cents; Stanford Paper Company, 7.35 cents; Eastern Corp., 6.31 cents; and Mathers-Lamm Paper Company, 6.25 cents.

For 8,736 pounds (56,000 sheets) of 38 x 48 lithograph finish map paper; Old Dominion Paper Company, 9.73 cents; R. P. Andrews Paper Company, 8.4 cents; Stanford Paper Company, 10.75 cents; Paper Corp. of U. S., 9.7 cents; Mudge Paper Company, 6.48 cents; Whitaker Paper Company, 9.65 cents; and Mathers-Lamm Paper Company, 6.4 cents.

For 5,025 pounds (50,000 sheets) of 100% rag, 21 x 32 white writing paper; R. P. Andrews Paper Company, 22.19 cents; Barton, Duer & Koch Paper Company, 21.45 cents; Stanford Paper Company, 22.25 cents; Mudge Paper Company, 21.69 cents; Old Dominion Paper Company, 22.2488 cents; Mathers-Lamm Paper Company, 24.65 cents; and Cauthorne Paper Company, 22.24 cents.

For 2,250 pounds (22,000 sheets) of 100% rag, 28 x 34 white bond paper; Walker Goulard Plehn Company, 24.09 cents less 3%; Stanford Paper Company, 24 cents; Barton, Duer & Koch Paper Company, 25.50 cents; Mudge Paper Company, 22.23 cents; Mathers-Lamm Paper Company, 23.95 cents; and Virginia Paper Company, 24.5 cents.

Paper Index Number Lower

WASHINGTON, D. C., March 19, 1941—In January the index of the value of paper mill inventories was 111.7 compared with 112.8 in December and 105.7 in January of last year, taking December 31, 1938 at 100, according to the Industry Survey of the Department of Commerce.

Index of value of paper manufactured shipments in January was 141 compared with 146 in December and 119 in January of last year, taking January 1939 at 100.

New orders placed with manufacturers rose to a record high in January, substantially exceeding the December peak. January shipments, however, failed to maintain the high level reached in December, with the decrease primarily accounted for by the durable goods industries. As a consequence, the gap between new orders and shipments of durable goods was even larger in January than in previous months; new orders were 1½ times as large as shipments, substantially expanding unfilled order backlogs. Total inventories continued upward, but the rise was the smallest recorded since September, 1939.

Total incoming business increased 6 per cent over December, the major part of the advance resulting from a rise of 9 per cent in nondurable goods lines. This gain, following declines in each month after September, is significant as it reflects not only a seasonal upturn but also the growing strength of consumer demand resulting from the filtering down of purchasing power flowing from the defense program.

Orders placed with manufacturers of durable goods in January were up 5 per cent but shipments of these products failed to respond to the continued strong demand and heavier backlogs. Deliveries of durable goods fell 6 per cent from the December volume, with all the major groups for which data are available contributing to the decline.

Total manufacturers' inventories rose only one per cent during the month, holdings of both the durable and nondurable goods manufacturers increasing approximately at the same rate. The advance in the total was somewhat under the 2 per cent a month rate recorded during the last quarter of 1940.

J. M. Opens New Southern Office

A new industrial department office has been established by Johns-Manville to facilitate service to the South's rapidly growing industry, according to an announcement by Lewis H. Brown, J-M president, on March 3. The new district, with headquarters at Atlanta, Ga., will serve the states of Georgia, Tennessee, North Carolina, South Carolina, Florida, Alabama, and Mississippi.

The new district is headed by Thomas J. Roberts, formerly assistant to T. K. Mial, J-M vice-president in charge of sales to industry and product development for general industrial use, with headquarters at New York.

Buy Paper Under Walsh-Healey Act

WASHINGTON, D. C., March 19, 1941—During the week ended March 11, the Government purchased $240,944.15 worth of paper and allied products under the Walsh-Healey Act as follows: $78,978.40 worth of index paper; manifold; wrapping, for Navy, S&A, from Paper Corporation of United States, New York; $11,034.45 worth Fibre boxes for War, CWS, Md., from The Hinde & Dauch Paper Company, Baltimore, Md.; $77,267.30 worth of molded pulp faceforms for War, CWS, Chicago, from Pulp Reproduction Company, Milwaukee, Wis.; $17,794.00 worth paper spit cups for War, Med. Brooklyn, from Stone & Forsyth Company, Boston, Mass.; $21,560.00 worth of paper cups for TVA from Dixie-Vortex Company, Chicago, Ill.; and $34,310.00 worth file folders for Navy, S&A, from Duradex, Inc., N. Y. C.

St. Regis Inn is Sold

DEFERIET, N. Y., March 17, 1941—Announcement is made here of the sale of the St. Regis Inn to Rex Thomson. The main building of the inn, constructed about 1900 by the St. Regis Paper Company, has a total of 125 rooms, a large grill and dining room. It also houses four bowling alleys owned by the St. Regis Paper Co.

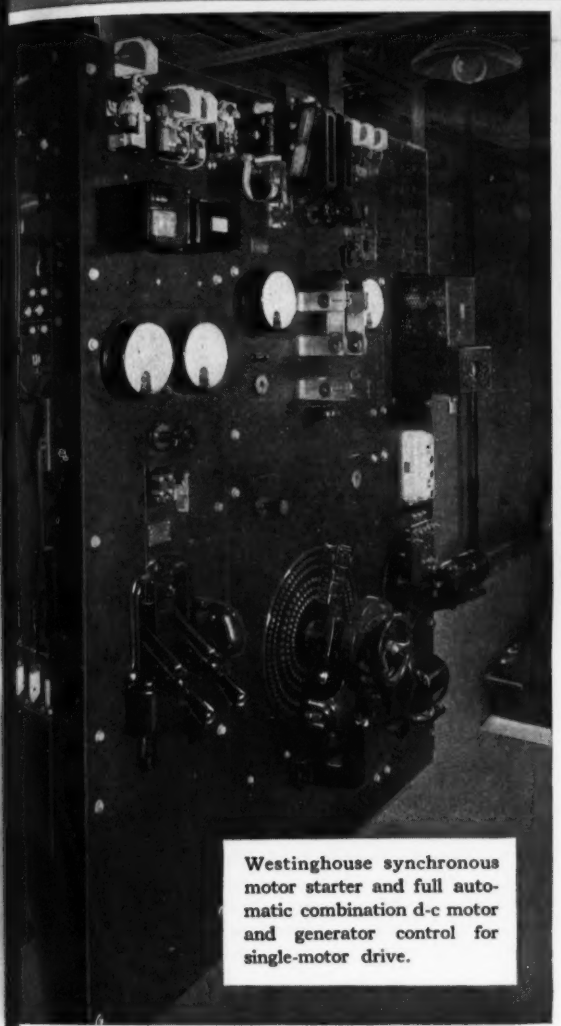
Covington Mill Damaged

A press report from Covington, Ky., under date of Monday, March 17, states that the plant of the West Virginia Pulp and Paper Company here was damaged by fire with loss estimated at $50,000.

GENERAL ELECTRIC

750-37

WESTINGHOUSE DEVELOPMENTS SPEED PAPER PRODUCTION



Westinghouse synchronous motor starter and full automatic combination d-c motor and generator control for single-motor drive.

Westinghouse main mill motor coupled into variable speed lineshaft.

Westinghouse single-motor paper machine drive steps up production

Equipped with Westinghouse single-motor drives, uniform speeds over a wide operating range are assured for lineshaft-driven paper machines. Maximum production is obtained . . . paper quality improved . . . and maintenance reduced.

In addition to the MG set and main motor, this drive incorporates full automatic control and a speed regulator with exclusive Westinghouse features.

Many mills throughout the country are using Westinghouse single-motor drives to speed up production, improve quality and cut costs. It will pay you to look to Westinghouse for an economical solution of your machine drive or other paper mill problems. A staff of experienced engineers is at your service.

WESTINGHOUSE ELECTRIC & MFG. COMPANY, EAST PITTSBURGH, PA.

LOOK TO WESTINGHOUSE FOR LATEST DEVELOPMENTS IN THIS EQUIPMENT:

MOTORS AND CONTROL
•
GENERATORS
•
TURBINES
•
SWITCHGEAR
•
TRANSFORMERS
•
LIGHTING
•
INSTRUMENTS

Westinghouse

J-94457

TIME-SAVER FOR THE PAPER INDUSTRY

FINANCIAL NEWS

New York Stock Exchange

High, Low and Last for Week Ending March 19, 1941

	High	Low	Last
A. P. W.	1¾	1½	1½
Armstrong Cork Co.	29¾	28⅞	29
Celotex Corp.	9¼	9	9
Celotex Corp., pf.	70	68½	69½
Certain-Teed Products Corp.	4	4	4
Certain-Teed Products Corp., pf.	30	28	29½
Champion Paper & Fibre Co.	18¾	18¾	18¾
Champion Paper & Fibre Co., pf.	104⅞	104½	104½
Congoleum-Nairn Co.	17	16½	16½
Container Corp. of America	14	13⅞	13⅞
Continental-Diamond Fibre Co.	8	8	8
Crown-Zellerbach Co.	13¼	13⅛	13¼
Crown-Zellerbach Co., pf.	87½	86¼	86¾
Flintkote Co.	13⅞	13⅝	13⅝
Robert Gair	1⅞	1¾	1⅞
Robert Gair, pf.	17¼	16⅝	17
International Paper & Power	14⅜	13¾	14
International Paper & Power, pf.	68¼	65	66⅞
Johns-Manville Corp.	61	58¾	61
Johns-Manville Corp., pf.	128	127¾	128
Kimberly-Clark Corp.	31	31	31
MacAndrews & Forbes	29	28½	28½
MacAndrews & Forbes, pf.	136½	136½	136½
Masonite Corp.	25¾	25	25
Mead Corp.	8¼	7⅞	8¼
Mead Corp., pf.	70½	70½	70½
Paraffine Companies, Inc.	31¾	30½	30½
Paraffine Companies, Inc., pf.	....	....	....
Rayonier, Inc.	14¾	14⅛	14⅛
Rayonier, Inc., pf.	27½	27	27
Ruberoid Co.	17⅜	16⅝	17
Scott Paper Co.	37½	36½	37
Scott Paper Co., pf.	108½	108½	108½
Sutherland Paper Co.	21½	21½	21½
Union Bag & Paper Corp.	11⅝	11⅛	11½
United Paperboard Co.	3	3	3
U. S. Gypsum Co.	64¼	62	63¼
U. S. Gypsum Co., pf.	....	....	....

New York Curb Exchange

High, Low and Last for Week Ending March 19, 1941

	High	Low	Last
American Box Board Co.	....	....	....
Brown Co., pf.	17¾	16⅜	17¾
Great Northern Paper	40⅛	40	40
Hummel-Ross Fibre Corp.	5¾	5¾	5¾
National Container Corp.	12½	11½	12⅜
St. Regis Paper Co.	2½	2⅛	2¼
St. Regis Paper Co., pf.	81	80	81
Taggart Corp.	3	3	3

St. Regis Makes Good Report

Consolidated net profit of the St. Regis Paper Company and subsidiaries for 1940 amounted to $2,087,105, nearly four times the profit of $547,829 earned in 1939, according to the annual report of R. K. Ferguson, president. This was equivalent after preferred dividend requirements to 43 cents a share on 4,120,714 common shares, against 6 cents a share earned in 1939.

Net sales, royalties and rentals were $21,365,149, against $15,359,478 in 1939, a gain of 39 per cent, while costs, expenses and depreciation were $17,917,510, against $14,198,296, an increase of 26 per cent. Federal and foreign income taxes were $973,979, or six times $156,842 provided for 1939. Net income does not reflect any equity in undistributed earnings of the Taggart Corporation, in which St. Regis holds 28 per cent of the common stock, Mr. Ferguson reports. Taggart earned $476,273 in 1940, against $525,147 in 1939.

In 1940 the corporation reduced its demand bank loan to $4,500,000 from $6,500,000 and retired $120,500 in subsidiary debt and $115,100 in subsidiary preferred stock, leaving a total funded debt of $1,269,500 and subsidiary preferred stock of $759,200 at the close of 1940. Preferred dividend on arrears at the close of 1940 were $61.25 a share, or $2,712,334.

In his message to stockholders Mr. Ferguson said: "It is difficult under present conditions to predict with any certainty the future economic trend, but should the present rate of earnings continue, the management will be in a position to make further reductions in its outstanding demand bank loan and prepare for the maturity of the Bates Valve Bag Corporation 6% debentures due August 1, 1942. Following this, the Company would be in a better position to consider its plans for the further simplification of the corporate structure including the discharge of the large accumulated unpaid dividends on its preferred stock."

"At the end of 1940 the number of employes in the Company and its subsidiaries aggregated 3,500 against 2,530 at December 31, 1939."

Kimberly-Clark Nets $3.44

[FROM OUR REGULAR CORRESPONDENT]

NEENAH, Wis., March 17, 1941—Gross profits of Kimberly-Clark Corporation totalled $5,712,246.46 for 1940, according to the annual income statement released last week by W. H. Clifford, treasurer.

The statement showed that net sales for 1940 totalled $29,322,194.92, against cost of sales amounting to $23,609,948.46.

There was a reduction on the profit on common stock. Based on 488,173 shares, the profit per share last year amounted to $3.44, compared with $4.21 for 1939, a reduction of 77 cents.

The statement further showed that the corporation's income before federal taxes amounted to $3,208,310.39, and the net income after totalled $2,375,569.39. The estimated federal taxes, including $167,000 for excess profits tax, amounted to $832,741.

The net profit on common stock for 1940 amounted to $1,681,181.28, and the net income before provision for preferred stock dividends amounted to $2,278,961.28, the provision for dividends on preferred stock amounting to $597,780.

General selling expenses, according to the statement, totalled $2,723,436.45, while profits from operations amounted to $2,988,810.01, with other income totalling $573,047.25.

Total income before bond interest, which amounted to $353,546.87, amounted to $3,561,857.26.

The statement indicated that the net loss of the William Bonifas Lumber Company was estimated at $72,080.46, while the loss of the North Star Timber Company totalled $24,527.65.

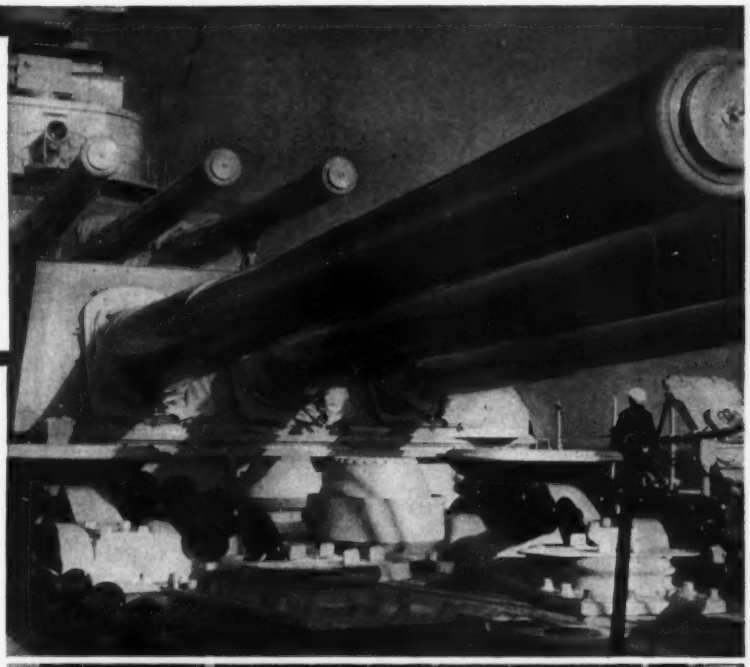
Consolidated Makes Good Report

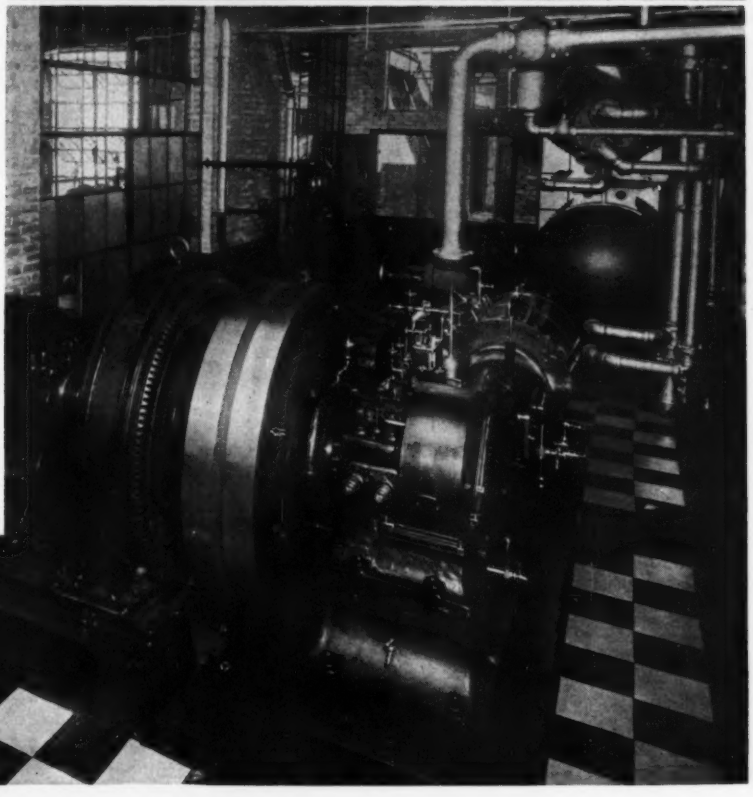
An all-time high was reached in 1940 sales and production by the Consolidated Water Power and Paper Company, Wisconsin Rapids, Wis., according to a statement of George W. Mead, president, appearing in the annual report issued last week. The company's four mills at Wisconsin Rapids, Stevens Point, Biron and Appleton, Wis. operated at near capacity through the year.

Net income for 1940 was $1,720,850, equal to $4.30 per share, a rise from the 1939 net of $1,531,982, or $3.82 per share. The balance sheet showed current assets of $5,399,063, including $1,911,591 in cash,

NATIONAL DEFENSE speed-up is forcing heavier service loads for longer working periods on all types of industrial equipment. *Correct* lubrication is the key to sustained top performance. For *steam engine* lubrication there are . . .

. . . SINCLAIR STEAM CYLINDER and VALVE OILS specially developed to meet every requirement under the varying temperatures, pressures and moisture content of steam and for the full range of speeds and loads of engine operation. Try Sinclair Engine Oils for efficiency and economy in heavy duty service. For further information or lubricating advice, write the nearest Sinclair office or to Sinclair Refining Company, 630 Fifth Ave., New York.





(Right) **HARRISBURG UNIFLOW** *steam engine (160 h.p. single cylinder) directly connected to a 125 KVA Burke AC generator in plant of Troy Laundry Co., Chester, Pa. During the past 6 years that this equipment has been Sinclair lubricated, the engine has been run 24 hours daily during various periods without any replacement or repair expense.*

Write for "The Service Factor"—a free publication devoted to the solution of lubricating problems.

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SINCLAIR REFINING COMPANY (Inc.)

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March 20, 1941

against $2,305,726 in liabilities. Current assets a year earlier were $4,102,640, compared with liabilities of $1,666,203.

President Mead said paper prices were keeping pace with nominal increases in raw materials but the fact that Consolidated produced a substantial portion of its pulpwood from its own timber resources aided by the company controlling the supply and price.

Provincial Paper Reports Gain

[FROM OUR REGULAR CORRESPONDENT]

TORONTO, Ont., March 17, 1941—Provincial Paper Co. reports a gain of about 10% in net earnings, but heavier taxes and requirements for exchange premium on bond interest resulted in lower net profits. The final result is equivalent to $7.81 a share on the preferred stock, against $9.82 a share for 1939. All of the company's common shares are owned by Abitibi Power & Paper Co., but no dividends were paid on the common.

Funded debt has been reduced to $3.3 millions from $3.4 millions. Cash is down from just over one million to $581,325, but that is balanced by $499,475 government bonds appearing among current assets.

Corrugated Box Nets $8.09

TORONTO, Ont., March 17, 1941—Corrugated Paper Box Company, Ltd., reports for year ended December 31, 1940, a net profit of $56,282 after all charges, equal to $8.09 a share on 6,966 shares of 7 per cent preferred, ($100 par) in arrears as to dividends. This compares with net profit of $59,509 or $9.10 a preferred share in the previous year.

Balance sheet shows current assets of $530,674 and current liabilities of $118,218, leaving net working capital of $412,456 compared with working capital of $349,310 in the previous year.

All branches of the company's business showed an improvement in volume and gross earnings, A. T. Whealy, president, stated.

Hinde & Dauch Earnings Up

The Hinde & Dauch Paper Company and subsidiaries, for 1940 reports a net profit of $975,458, equal, after dividends on 35,900 shares of $5 cumulative convertible preferred stock, to $2.21 each on 360,250 shares of common stock, compared with $862,384, or $1.90 a share in 1939. Dividends received last year from the Hinde & Dauch Paper Company of Canada, Ltd., a non-consolidated subsidiary, amounted to $72,675, or $154,013 less than the company's proportionate interest in earnings, compared with dividends of $68,777 received in 1939, which were less than the company's interest by $4,336.

Celotex Reports for Quarter

The Celotex Corporation for the quarter to January 31 reports consolidated earnings of $456,865, before provision for excess-profits tax. This is equal, after preferred stock dividends, to 66 cents a share on 638,410 common shares. For corresponding quarter of previous year company had a net loss of $194,865. No part of earnings of Celotex, Ltd., which continue at substantial rate, is included in consolidated earnings. Net sales for the quarter were $4,008,537, against $2,566,026 in the January quarter of preceding year.

Johns-Manville Profits Gain

The Johns-Manville Corporation and subsidiaries, for the year ended December 31, reports a profit of $5,882,071 after taxes and charges, equal after preferred dividends to $6.35 a share on 850,000 shares of common stock, compared with $4,127,691 or $4.24 a share in 1939. Foreign subsidiaries other than Canadian are excluded. Balance sheet items include cash of $8,888,400 compared with $9,108,496; accounts and notes receivable $7,897,822 compared with $5,569,970; inventories $9,154,262 compared with $8,511,115; current liabilities $7,243,005 compared with $4,391,427.

Champion Earns $652,887

The Champion Paper and Fibre Company and subsidiaries for the twelve weeks to February 2 reports a net profit of $652,887, equal after preferred dividends to 97 cents each on 550,700 no-par common shares, against $486,849, or 67 cents a common share, for the twelve weeks to February 4, 1940. Forty weeks to February 2: Net profit, $1,829,634, or $2.59 a common share, against $1,212,654, or $1.52 a share, for preceding forty-week period.

Dixie-Vortex Nets $1.84

The Dixie-Vortex Company and subsidiaries for 1940 reports a net profit after amortization of patents, interest and excess profits taxes, of $820,229, equal after dividends on Class A stock to $1.84 each on 202,666 common shares, against $856,200, or $2.02 a share the year before.

Gair Nets $461,728

The Robert Gair Company, Inc. for 1940 reports a net profit of $461,728, exclusive of profits of Canadian company and subsidiaries, contrasted with net loss of $633,826 year before. The 1940 net profit of Gair Company Canada, Ltd., was $241,964 (Canadian), compared with net profit of $185,440 in 1939.

Schumacher Earnings Rise

The Schumacher Wall Board Corporation for the nine months to January 31, reports a net income of $182,393, equal, after preferred dividends, to $1.93 a share on 66,000 common shares, against $134,878, or $1.40 a common share, for nine months to January 31, 1940.

Hoberg Profits Higher

The Hoberg Paper Mills for 1940 reports a net income of $289,192, equal after preferred dividends, to $2.68 a share on 92,995 common shares, against $187,500, or $1.59 a common share the year before; net sales, $4,265,522, against $3,764,893.

Mac Sim Bar Nets $136,641

The Mac Sim Bar Paper Company for 1940 reports a net income of $136,641, equal to 46 cents each on 297,555 shares of common stock, against 1939 net of $90,227 or 30 cents a common share; net sales, $2,601,912 against $2,388,094.

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Overnight!

BUY BALDWIN

STEEL REPLACEMENT CHAIN BELT!

● If at first glance you think we're too enthusiastic about what Baldwin steel replacement chain belts can do to end your conveyor troubles, read a little further and consider this:

This is no ordinary chain belt, *but one of strong, wear-defying, corrosion-resistant steel,* built to operate on the same sprockets and on the same runs as the ordinary chain belt conveyor you're now using.

We rest its case entirely on these facts: It ends too-frequent repairs, early wear and recurring maintenance on pulpwood conveyors; it eliminates the tiresome watchfulness required by ordinary chain belt conveyors and it helps maintain high speed schedules without costly interruption.

That these improvements are worth paying for is testified by growing list of pulp mill operators who are using this great chain belt throughout their mills.

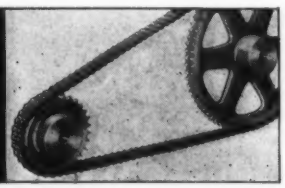
If you are interested in really ending your conveyor worries, let us hear from you. Or, call the Baldwin man and get the story from him.

WE PREPARED THIS BOOK FOR YOU!

If watching the cost of pulpwood production is your business, you should have a copy of Baldwin Bulletin 65 close at hand. It contains complete, concise information on the long line of Baldwin steel replacement conveyor chain belts as well as other standard Baldwin roller chain belts. You'll be surprised at the many worthwhile hints it will give you.

Ask the Baldwin man or write to the address below for your copy.

BALDWIN
CHAIN BELTS



Please address your inquiry to:

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Division of Chain Belt Company
339 Plainfield Street, Springfield, Mass.
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CONSTRUCTION NEWS

Wabash, Ind.—Container Corporation of America, Inc., 111 West Washington street, Chicago, Ill., manufacturer of corrugated paper boxes and containers, has plans maturing for new addition to paper board mill at Wabash, to be one-story, estimated to cost close to $50,000, with equipment. It is proposed to begin work at early date and have structure ready for service in June.

Cloquet, Minn.—The Wood Conversion Company, manufacturer of insulating board, building board, etc., will award contract soon for structural steel framing for addition to dryer building at mill, forming part of general improvement program at plant, recently referred to in these columns. New structure will be one-story, reported to cost in excess of $50,000, with equipment. Thomas J. Shefchik, Lonsdale Building, Duluth, Minn., is architect.

Elizabeth, N. J.—The Wilson-Jones Company, 1000 South Elmora avenue, manufacturer of commercial paper products, loose leaf paper goods, binders, etc., has plans under way for new addition to plant for large increase in present capacity, to be one-story and basement, 175 x 280 feet, reported to cost over $125,000, including equipment. It is proposed to ask bids on general erection contract at early date. William D. Sherman, 286 North Broad street, Elizabeth, is architect. Main offices of company are at 3300 West Franklin street, Chicago, Ill.

Paperville, Pa.—Fire recently damaged a portion of mill of the Beach & Arthur Paper Company, Paperville, near Coatesville, manufacturer of tissue paper stocks, with loss reported close to $22,000. It is planned to replace damage at early date.

Cleveland, Ohio—The Moser Bag and Paper Company, 2187-89 Ashland road, manufacturer of paper bags and containers, is awarding a number of miscellaneous sub-contracts in connection with new one-story plant, 100 x 240 feet, previously referred to in these columns, and on which work is now under way. The Mooney Iron Works Company, 3319 East 80th street, will furnish structural steel framing; and the Mills Sales Company, Plymouth Building, all steel sash. The Spohn Heating & Ventilating Company, 1775 East 45th, has the plumbing and heating award. New plant will cost over $80,000, including equipment. The A. M. Higley Company, 2036 East 22nd street, is general contractor; John W. Little, last noted address, is architect.

Red Lake Falls, Minn.—The local mill of the Fiber Products Company, now occupied under lease by Smith Paper, Inc., Lee, Mass., manufacturer of special tissue and processed paper stocks, was destroyed by fire recently. No estimate of loss has been announced. The property was operated by the last noted company for certain raw material production used in manufacture of special papers.

Buffalo, N. Y.—The National Gypsum Company, 190 Delaware avenue, manufacturer of wall board, insulating board and allied products, has plans maturing for a new multi-story building on local site, to be used for general operating and office service.

Pearisburg, Va.—The Celanese Corporation of America, Inc., 180 Madison avenue, New York, N. Y., manufacturer of cellulose rayon products, has awarded general contract to the George F. Hazelwood Company, Cumberland, Md., for proposed new additions to branch mill between Pearisburg and Narrows, Va., comprising several one and multi-story units for expansion in practically all departments, including processing, chemical pulp and other divisions. Work will be placed under way at once and will be carried out over a period of months. Entire project is estimated to cost close to $1,500,000, including machinery, instead of a smaller sum, as previously noted in these columns. New units are expected to increase present working force of 1400 to about 2400 persons on completion.

Toronto, Ont.—Canadian Wire Bound Boxes, Inc., 1000 Gerrard street East, manufacturer of corrugated boxes and containers, etc., has asked bids on general contract for two new additions to plant, recently referred to in these columns, each one-story, to be about 80 x 80 feet, and 25 x 100 feet, respectively. Cost estimated close to $80,000, with equipment. It is proposed to carry out erection early in the spring. J. M. Cowan, 555 Russell Hill road, Toronto, is architect.

New Companies

Brooklyn, N. Y.—The Harrison Paper Box Corporation has been incorporated with capital of 200 shares of stock, no par value, to manufacture and deal in paper boxes and containers. New company is represented by Warshaw & Golden, 270 Broadway, New York, attorneys.

New York, N. Y.—The Bato Company, Inc., Bronx, has been chartered with capital of $20,000, to deal in paper goods of various kinds. New company is represented by Goodell, Hoffman & Spark, 535 Fifth avenue, New York, attorneys.

Los Angeles, Calif.—The American Fiber Corporation of California, Inc., care of United States Corporation Company, Van Nuys Building, representative, has been organized with capital of $250,000. to manufacture and deal in fiber products. The incorporators are H. E. Higginson and V. B. Eilson, Los Angeles; and W. D. Higginson, Altedena, Calif.

Auburn, N. Y.—The A. & R. Paper and Metal Company, Inc., has been incorporated with capital of $10,000, to deal in waste paper products, etc. New company is represented by Mosher & Schneider, Pearson Building, Auburn, attorneys.

Brooklyn, N. Y.—The American Wallboard Corporation has been incorporated with capital of 100 shares of stock, no par value, to deal in wallboard products and allied paper specialties. New company is represented by Herrick & Feinstein, 26 Court street, Brooklyn, attorneys.

New York, N. Y.—The Gottlieb Brothers Container corporation has been incorporated with capital of $20,000, to manufacture and deal in paper boxes and containers, etc. New company is represented by Robbins Stationery Company, 25 Warren street, New York.

Indianapolis Optimistic

[FROM OUR REGULAR CORRESPONDENT]

INDIANAPOLIS, Ind., March 17, 1941—While demand for virtually all items in the paper list is moving nicely, the trade appears to be waiting for a break in the weather, when it is predicted this section will see some real business.

A large demand is foreseen this year for cartons and containers. The demand from the larger egg producers should be vastly increased. A new state law regulating more strictly the sale of "fresh" eggs is expected to cause the producers of better eggs to go in for containers in a big way.

Sale of waxed containers to the milk trade is increasing even though the season has not started.

Another boost to the container trade is expected from the dairy industry. A new law makes it illegal for a dairy to use containers having the trade name of another company. A well defined trend already has been seen toward waxed containers for the milk trade in Indianapolis and this is expected to increase rapidly when the new law goes into effect and to spread to all parts of the state.

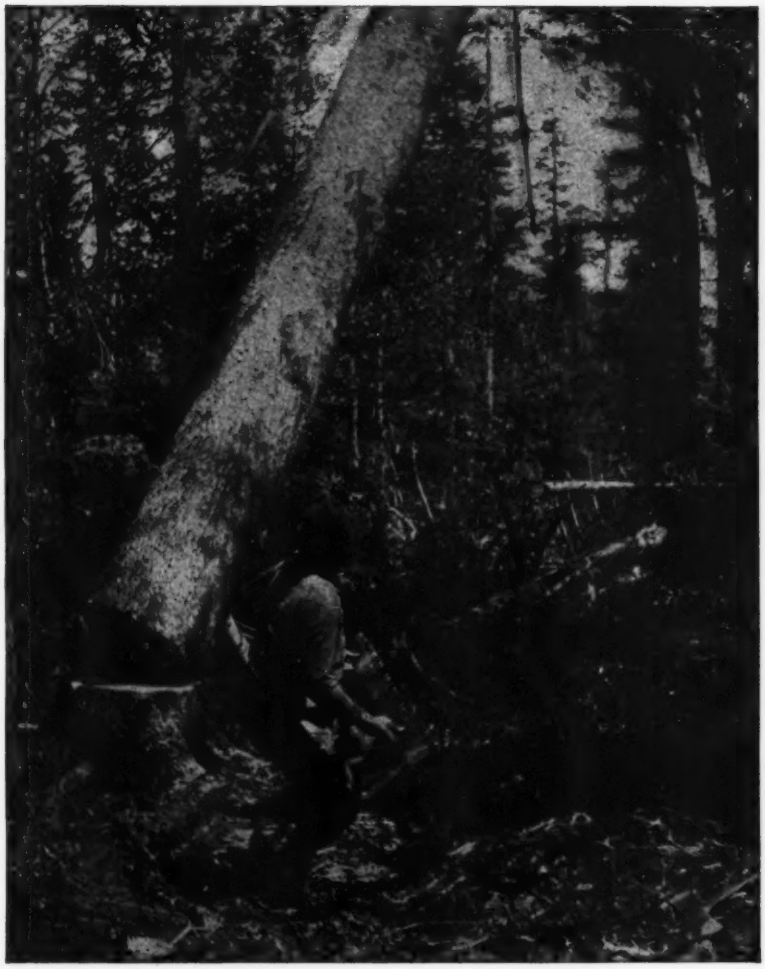
The local trade is taking kindly to the waxed container for milk. Many of the large chain store are demanding milk in this form to eliminate handling of bottles. Inquiries are being received now for larger containers for the early vegetable trade, most of the inquiries coming from the co-operatives who buy early and in large quantity.

Building paper and roofing continue to boom. The year, thus far has seen more of these commodities sold than any similar period in history here.

Dealers have been buying for current needs, but their stocks are none too large and when spring actually arrives the rush is expected to be perhaps more than factories can supply on short notice.

Demand for wrapping paper, bags and other kraft items is large. Retail stores are in the market and inquiries now are being received for summer specialties. These are expected to begin moving before the end of the month. Many of the jobbers have prepared some nice deals in summer specialties.

Prices in all lines are firm.



A *Forest Tree* **is as much a part of the picture of modern papermaking as a papermaker's felt—only trees grow naturally, and felts must be man-made.**

Years of experience go into the making of every DRAPER FELT. If you have never tried one, it's time to find out why so many prefer *Draper Felts.*

A representative will call at your convenience.

Draper Felts Favor Efficiency

DRAPER BROTHERS COMPANY

Woolen Manufacturers Since 1856 CANTON, MASS.

OUR REPRESENTATIVES *to serve you*

L. H. BREYFOGLE, Kalamazoo, Mich.
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UNITED PIGMENTS

Pure Titanium Dioxide

UNITANE-O

A brilliantly WHITE, pure, fine titanium dioxide possessing excellent . . .

- **OPACITY**
- **BRIGHTNESS**
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Suitable for ALL types of paper ranging from thin printing papers and waxing tissues to coated book and magazine stocks.

UNITANE O—110 was especially developed for paper pigmentation. Its excellent dispersion in water promotes good retention and excellent sheet formation. As a component of the beater furnish, it produces *whiter* sheets of *great brilliance,* and superior printing qualities.

SAMPLES of UNITANE O-110 will be sent promptly upon request.

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UNITED COLOR AND PIGMENT CO.

DIVISION OF INTERCHEMICAL CORPORATION

NEWARK, NEW JERSEY

SALES OFFICES IN PRINCIPAL CITIES

FINE PAPER PRODUCTION

(Continued from page 13)

pleton, where its power plant now stands, working as a winder boy at 75 cents for a twelve hour day. Today, as assistant general superintendent at the general offices at Neenah, Wis., in charge of the pulp and paper department, he has completed fifty years of continuous service.

Two important occasions mark the celebration. Forty-nine of his intimate associates, including the officers and board of directors, gave a dinner in his honor Thursday evening of last week at the American Legion clubhouse at Oshkosh, Wis. He was presented with a watch and chain on behalf of the corporation by Ernst Mahler, executive vice-president, who with F. J. Sensenbrenner, president, and H. G. Boon, superintendent, gave talks. William Kellett, manager of the Lakeview mill, acted as toastmaster. Arrangements for the dinner were made by S. F. Shattuck, vice-president, C. W. Nelson, H. A. Rothschild, W. H. Swanson, Daniel Keck and Fred Seaborne.

In 1917 Mr. Kranhold helped convert the company's mill at Niagara, Wis., from newsprint to book paper, and he was promoted to staff paper mill superintendent in 1919. He took charge of the Telulah mill at Appleton until its sale in 1920 to the Fox River Paper Company. He next went to Niagara Falls, N. Y., to start the company's new paper mill there, and then was sent to Kapuskasing, Ontario, to assist in getting the sulphite pulp drying machines into operation. Three years later he was moved to the Neenah office and took up his present duties as assistant general superintendent. In 1928 he assisted in starting the news print mill at Kapuskasing which furnishes all paper for The New York Times. He commented that this mill was a far cry from the 47-inch machines of the early days, as compared to the 224-inch machines in the new mill. What is known as Mr. Kranhold's "bible", a well-thumbed brown covered ledger, contains more paper mill history than any book printed. It was from this source that Edna Ferber obtained most of the factual information for her book, "Come and Get It." The job fifty years ago that paid him 75 cents for a 12-hour day now pays 63 cents per hour for a six-hour day.

Badger Wins Repackaging Award

Badger Paper Mills, Inc., Peshtigo, Wis., has been awarded first place for a repackaging job in the opaque wrap division of the tenth annual all-America package competition sponsored by Modern Packaging magazine. The award trophies will be officially presented at a banquet at Stevens Hotel, Chicago, April 2. The company also has been given recognition for its Vertex shelf and drawer lining paper.

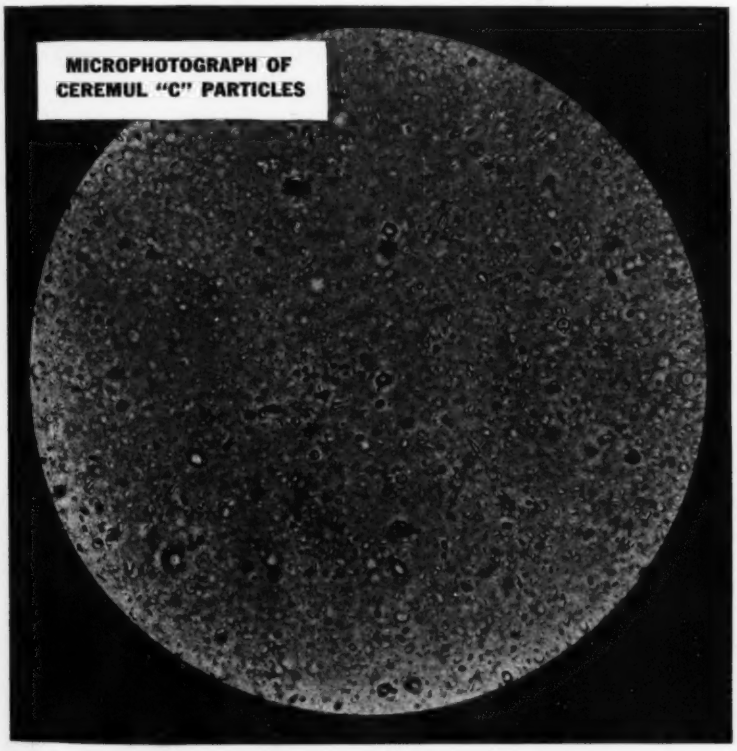
Redesigning the printed wraps for its Vertex shelf paper and Twink waxed paper, the company developed transparent cellulose coverings, utilizing the latest type of metallic cast inks and high grade gravure printing. The improvement had the effect of virtually doubling the sales within a short period. The redesigning also permits of automatic packaging, thus providing economy as well as improved appearance.

Soundview Earns $151,912

The Soundview Pulp Company for February reports a net income of $151,912, against $183,629 earned in same month last year.

IMPORTANT FACTS ABOUT CEREMUL "C"

Tiny Particle Structure Makes S/V Ceremul "C" a Unique Beater Size



500 TIMES ACTUAL SIZE, these particles of S/V Ceremul "C" were photographed through a microscope in tests conducted at the Socony-Vacuum General Laboratories in Brooklyn, N. Y.

VIEWED under a microscope, the tiny particle size of S/V Ceremul "C" is apparent.

Notice the accompanying microphotograph. Then imagine particles 1/500th the size of the ones shown here. Now you have an idea of how small S/V Ceremul "C" particles actually are.

This means three advantages:

1. *Uniform quality*
2. *Minimum danger of wax spots*
3. *Increased sizing efficiency.*

Ceremul "C" is put into the beater as a dilute emulsion in cold water. It gives a maximum of wax with a minimum of emulsifier. This means ease of precipitation and top sizing efficiency.

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STANDARD OIL OF NEW YORK DIVISION · WHITE STAR DIVISION · LUBRITE DIVISION
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PAPER TRADE JOURNAL
Title Reg. U. S. Pat. Off.
Henry J. Berger
EDITOR

Vol. 112 March 20, 1941 No. 12

COMING EVENTS IN PAPER INDUSTRY

NEW ENGLAND SECTION. Technical Association of the Pulp and Paper Industry—Third Friday of each month at the Roger Smith Hotel, Holyoke, Mass.

DELAWARE VALLEY SECTION. Technical Association of the Pulp and Paper Industry—First Friday of each month at the Engineers Club, Philadelphia, Pa.

LAKE STATES SECTION. Technical Association of the Pulp and Paper Industry—Second Tuesday of each month at the Conway Hotel, Appleton, Wis.

KALAMAZOO VALLEY SECTION. Technical Association of the Pulp and Paper Industry—First Thursday of each month at the Park, American Hotel, Kalamazoo, Mich.

AMERICAN PULP AND PAPER MILL SUPERINTENDENTS ASSOCIATION, Twenty-second Annual Convention, Poland Spring House, Poland Spring, Me., June 17-19.

LABOR DISPUTES

Labor troubles continue to seriously slow down the National defense program. During the first week of the current month thirty-one defense projects were affected by strikes, fifteen of which involved CIO unions and sixteen involved AFL unions. How long this waste of time, delay of urgently needed production and huge loss in wages will continue is uncertain but the prevention of stoppage in essential industries must soon be terminated in the interest of the public welfare.

Labor leaders have declared that they intend to drive hard to effect as complete unionization as can be accomplished of all types of workers in all industrial plants. This effort is now progressing more rapidly than in the past, as union leaders are aware that the Government must soon adopt a labor policy restricting industrial conflict in defense industries. Some congressional leaders have declared themselves in favor of some regulation of union activities. The Office of Production Management, on the other hand, is not in favor of congressional action, and holds the view that legislative action would confuse and complicate their problems.

This fear of Government action by the OPM has brought forward plans for a National Defense Mediation Board. Many employers and practically all unions do not approve of this plan. But OPM officials have stated that the proposed mediation board would function as a high court for labor disputes. The NLRB and the Conciliation Service of the Department of Labor would continue to function as at present. But, if these agencies were unable to effect a settlement, the Defense Mediation Board would step in and attempt to solve the difficulties. In other words, the Mediation Board would sit in judgment on the merits of any case and would make recommendations for settlement. It is assumed that the Board would be authorized to recommend Government operation of any plant or direct any labor group which failed to accept the Board's decisions. In the absence of any principles of procedure, it has been pointed out, the Mediation Board would have difficulty in arriving at equitable decisions.

In the meantime the Supreme Court has acted to restrict the National Labor Relations Board in its attempt to impose on employers penalties not provided by Congress. Two weeks ago the Court restrained the NLRB from attempting to regulate all future actions of an employer when that employer has once violated any provisions of the Wagner Act. The Supreme Court has now ruled that the law does not provide the NLRB with authority to enjoin violations of all provisions of the statute, merely because the violation of one has been found."

It has been stated many times that the NLRB has frequently used the violation of a single provision of the Wagner Act to obtain injunctions from the courts to restrain employers from any future violation of any section of the Labor Law. This has resulted in subjecting employers to contempt of court proceedings for any minor infraction of law that the NLRB might later find against them. In Justice Stone's decision, involving an NLRB order against the Express Publishing Company, of San Antonio, Texas, requires an order restraining an employer from future violations of the act, to show some resemblance to the infraction which the employer has committed "or that danger of their commission is to be anticipated from the course of his conduct in the past."

It may be recalled that in earlier reversals of Labor Board decisions that involved attempts to compel employers to reinstate employees with back pay, the Court in one decision ruled that the Labor Board has no authority to require an employer to invalidate agreements with a labor union, although the Labor Board had held that the employer had illegally aided the union involved. In a decision involving the familiar Fansteel Corporation case, and also in the case of the Sands Manufacturing Company, the Court held that the Labor Board was without authority to order reinstatement of sit-down strikers or former employees dismissed for violation of a collective bargaining contract.

In another case the decision of the Court was against the Labor Board and declared that the Board could not devise punitive measures, penalties or fines even though the Board should believe that such penalties would "effectuate the policies of the act." The latest decision of the Supreme Court is considered to provide a long needed protection for employers who have been found to have violated one specific provision of the law, from being subjected to contempt proceedings in the courts because of any finding by

the Labor Board based on subsequent violations of other requirements of the Wagner Act. In the fifth annual report issued by the Labor Relations Board, an increase is shown in the number of cases in which the Board has conducted secret ballot elections to determine whether a union represents a majority of the employees for whom it seems to bargain. There is also a decrease in the number of cases in which the Board is called upon to protect the rights of union employees. A small decline is shown in the number of cases filed by the Board, with fact-finding cases representing 48% of all cases in 1940, compared with 43% for 1939.

Although amendment of the Wagner Act has been recommended by many manufacturers, labor leaders have voiced opposition to any changes in the present law. The Administration is opposed to legislation to restrict strikes and to otherwise regulate labor. Officials have declared their preference for negotiation. The recent proposal of Representative Howard Smith, Democrat, of Virginia, to ban the closed shop on some new Army and Navy projects was defeated in the House. While amendment of the labor act is generally considered improbable, it would seem that some revision of the law is required to clearly state the powers which Congress grants to the Labor Board, rather than to leave such powers at the discretion of the Board.

P. J. Schweitzer Buys Salpa Plant

The fifty-two-acre industrial plant formerly owned by the American Salpa Corporation at Spotswood, N. J., has been purchased by Peter J. Schweitzer, Inc., of Elizabeth and Jersey City, N. J., paper manufacturer, through Joseph P. Day and the Joseph J. Garibaldi Organization.

The property is composed of a group of one and three story steel and concrete manufacturing and warehouse buildings, having a total floor area of more than 300,000 square feet. It fronts on the Bordentown-Amboy Turnpike and is served by sidings from the Camden and Amboy divisions of the Pennsylvania Railroad. It has an abundant supply of soft water in wells on the land, a factor which influenced its purchase by the new owners.

The buyers, after some alterations, will immediately occupy the property for the manufacture of cigarette paper. The Schweitzer company operates plants also in Jersey City, Elizabeth, N. J., and Harrisburg, Pa.

This is the second sale of the property made by Mr. Day and Mr. Garibaldi, they having sold it in 1933 to a subsidiary of the National Lead Company which sold it to the Spotswood Realty Company in 1937. Since that time the plant has been idle except for storage purposes. The original cost to build and equip it was $3,000,000.

Negotiations for the purchase by the Schweitzer company were assisted by Peter M. Kroeger, Industrial Commissioner of Middlesex County, and A. W. Coffin, director of the Industrial Council. Title was insured by the Lawyers Title Corporation of New York.

Production Ratio Report*

(Production as per cent of six-day capacity)

COMPARATIVE WEEKLY SUMMARIES

Current Weeks, 1941		Corresponding Weeks, 1940	
February 1	85.5	February 3	89.2
February 8	86.8	February 10	87.9
February 15	88.9	February 17	86.6
February 22	89.6	February 24	86.8
March 1	88.9	March 2	83.5
March 8 (Prelim.)	90.1	March 9	83.4

COMPARATIVE MONTHLY SUMMARIES

Year	Jan.	Feb.	Mar.	Apr.	May	June	July
1940	90.2	86.2	83.9	86.3	91.8	93.8	87.1
1941	84.8	89.4	...	...	...	...	...

Year	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1940	87.2	83.2	88.0	86.9	83.2	87.5
1941	...	...	...	...	...	...

COMPARATIVE YEARLY SUMMARIES

	1935	1936	1937	1938	1939	1940	1941
Year to Date...	67.9	77.3	90.1	66.8	80.4	87.9	87.7
Year Average..	70.5	81.3	80.6	72.3	84.9	87.5	..

* Based on tonnage reported to American Paper and Pulp Association. Does not include mills reporting to National Paperboard Association, except in isolated cases where both paper and paperboard are produced and separate tonnage figures are not readily available. Does not include mills producing newsprint exclusively.

PAPERBOARD OPERATING RATIOS†

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1936	62	67	67	70	69	70	69	75	78	82	80	74	72
1937	80	86	86	88	85	77	66	74	69	65	55	45	73
1938	54	60	61	57	58	56	57	66	66	70	65	59	61
1939	60	67	71	69	64	67	63	72	74	84	81	71	70
1940	71	70	69	70	76	79	72	74	72	79	77	71	73
1941	75	81	..	..	..	..	..	..	..	..	..	..	..

Week ending Feb. 1, 1941—79 Week ending Feb. 22, 1941—80
Week ending Feb. 8, 1941—79 Week ending Mar. 1, 1941—82
Week ending Feb. 15, 1941—81 Week ending Mar. 8, 1941—80

† Per cents of operation based on "Inch-Hours" reported to the National Paperboard Assn.

Merrimac Paper Co. Changes

LAWRENCE, Mass., March 17, 1941—J. D. Kingston has requested that he be relieved of his active duties as superintendent of the Munroe and Merrimac Divisions of the Merrimac Paper Company, Inc.; but in view of Mr. Kingston's long paper making experience and complete knowledge of both the plants an arrangement has been made with him whereby he will be employed on a semi-retired basis, acting in an advisory capacity to the management.

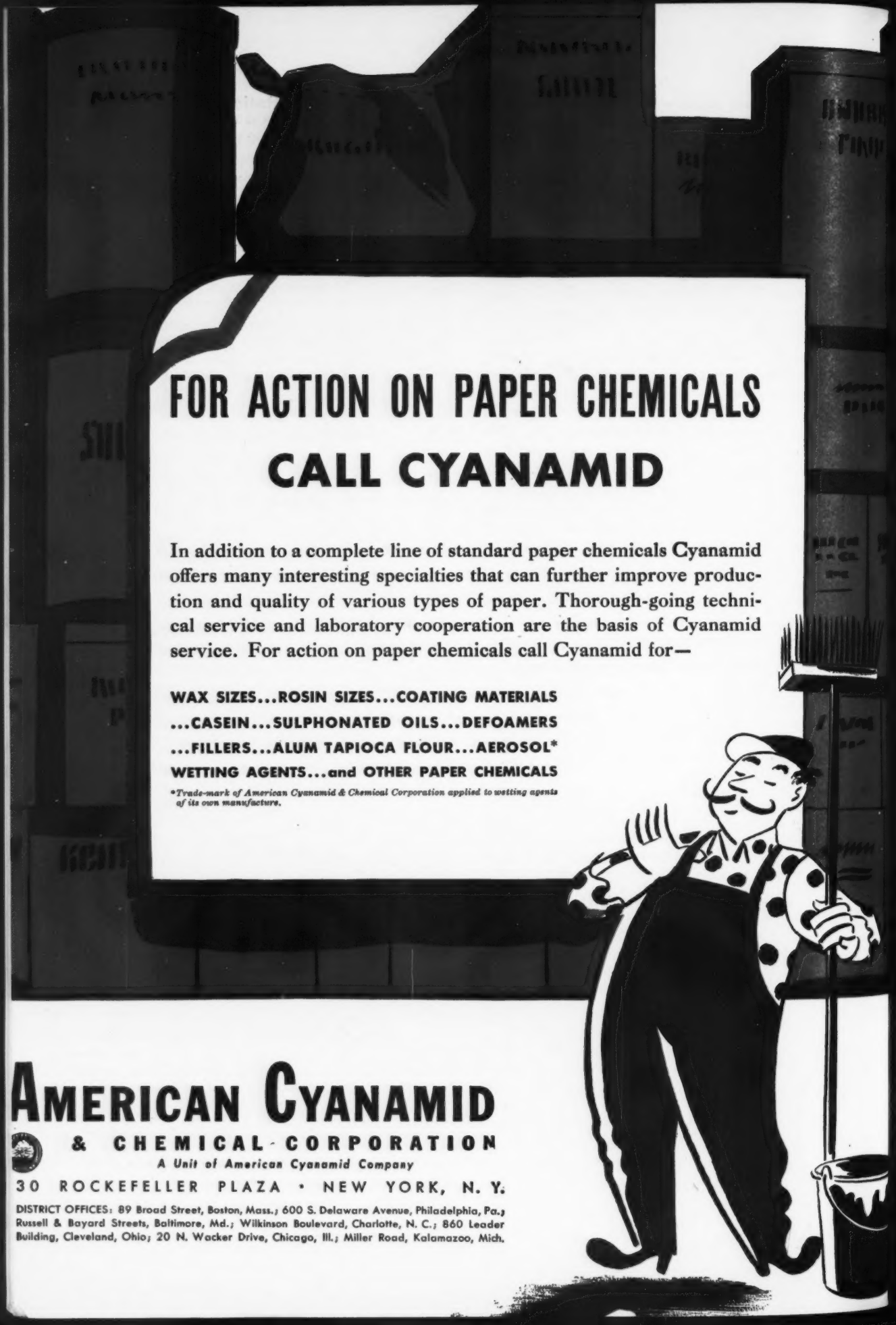
A. E. Fuller, formerly of the Hollingsworth & Whitney Pulp and Paper Company and of the Gilman Paper Company, assumed the duties of production manager with complete charge of all production facilities of both the Munroe and the Merrimac Divisions on March 1.

Chester Child has been appointed technical director. In addition to his duties as head of the laboratory he will assist Mr. Fuller in the development and the improvement of the company's products.

Percy D. Wells to Handle Action Bond

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., March 17, 1941—The Crocker-McElwain Company of Holyoke, Mass., has announced the appointment of Percy D. Wells, Inc., of Boston, as a distributor of Action Bond, Action Script and Action Ledger. On becoming a distributor of these lines, Percy D. Wells, Inc., will be able to serve the printing and lithographing trade in the Boston area. Regular requirements can be serviced from the warehouse stock in Boston, backed by a large reserve stock at the mill just a few hours away.



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Section of the
Technical Association of the Pulp and Paper Industry

Edited by Ronald G. Macdonald, Secretary

Some Applications of Statistical Methods to the Interpretation of Routine Tests*

By T. A. Pascoe[1] and Marian Fraser[2]

Abstract

Practical examples are given showing the application of elementary statistical methods that are useful in the analysis of routine test information. Emphasis has been placed on the study of variation using the standard deviation and co-variation or correlation through the use of the correlation coefficient. The significance of differences and of correlation coefficients have been discussed. Suggestions are offered showing how other test information may be handled in a manner similar to that used in the specific examples given.

It is pointed out that these statistical tools can be especially useful in view of the inaccuracies of most routine test methods and the inherent variability of pulp and paper.

There are few references in the technical literature of the industry that deal with the use of statistical methods for the analysis of routine or other technical data. Simmonds and Doughty *(1)* discussed the mechanics of elementary statistical methods and pointed out several possible applications to the testing of pulp and paper. Doughty and Curran *(2)* presented a study of various types of laboratory sheet machines, and used statistical methods to assist in drawing their conclusions regarding expected variability, the limits of accuracy that were possible, and the effects of several factors that enter into laboratory sheet making. Graff *(3)* and Graff and Miller *(4)* have employed some of the elementary statistical tools to analyze their data on fiber analyses and fiber dimensions. The papers cited show the application of statistical methods to assist in the study and selection of other technical methods or testing equipment. In such cases the expected errors inherent in the method or equipment are evaluated, and the number of repetitions of the tests required to bring the results within specified limits of error are determined. The choice of methods and their evaluation is one of the two broad fields in which statistical methods are of great assistance. In this field the work when once done need not be repeated. The choice of a properly evaluated method logically leads into the other broad field of application and the one with which this discussion will be most concerned, namely, the analysis of results obtained through the use of routine methods. In the latter case the emphasis is on relating such test data to routine operations involving processes and products. In order to follow variations in products and plot trends in manufacturing processes therefore work of this nature must be continual or recurrent.

Fisher *(5)* stated that statistics is a study of populations, of variations, and of methods for the reduction of data. The study of population or the relation of a certain group or groups of data to a larger mythical group of similar data involves certain familiar concepts such as the theory of sampling, sampling errors, estimated accuracy of a single test, or a series of repeated tests. Although certain aspects of this part of statistics will be employed in this discussion, it is evident that these tools are more useful in designing experiments, tests, or test equipment.

Since pulp and paper routine test data are notoriously variable because of the inherent variability of pulp as a biological material, the statistical methods dealing with variability are eminently fitted for bringing order out of an unintelligible chaos. Methods involving the reduction of large bodies of data to a few significant values can be of real assistance.

The use of statistical methods allows the reduction of numerous test results, made on highly variable materials with not very accurate test methods, to a few valid conclusions of measured reliability.

Nomenclature

N	= Number of individuals in series
x, y	= Individual variables
$\bar{x}$, $\bar{y}$	= Mean of x and y respectively
$SE_{\bar{x}}$, $SE_{\bar{y}}$	= Standard error of $\bar{x}$ and $\bar{y}$
σ_x, σ_y	= Standard deviation from $\bar{x}$ and $\bar{y}$
$SE\delta_x$; $SE\sigma_y$	= Standard error of standard deviation of $\bar{x}$ and $\bar{y}$
$C\ V$	= Coefficient of variability
r_{xy}	= Coefficient of correlation of x and y
SE_r	= Standard error of r
Σ	= Summation or the sum of
SEE	= Standard error of estimate
$R_{y/x}$; $R_{x/y}$	= Regression lines of y on x and x on y
$R\ C$	= Regression coefficient
SE_d	= Standard error of difference of means.

* Presented at the Annual Meeting of the Technical Association of the Pulp and Paper Industry, Roosevelt Hotel, New York, N. Y., Feb. 17-20, 1941.

[1] Member TAPPI, Technical Director, Nekoosa-Edwards Paper Company, Port Edwards, Wis.

[2] Statistician, Technical Department, Nekoosa-Edwards Paper Company, Port Edwards, Wis.

Formulas:

$$\bar{x} = \frac{\Sigma x}{N};\ \bar{y} = \frac{\Sigma y}{N} \qquad C\,V = \sigma_x\left(\frac{100}{\bar{x}}\right)$$

$$\sigma = \sqrt{\frac{\Sigma(x^2)}{N} - (\bar{x}^2)} \qquad r_{xy} = \frac{\frac{\Sigma(xy)}{N} - \bar{x}\,\bar{y}}{\sigma_x\,\sigma_y}$$

$$SE_{\bar{x}} = \frac{\sigma_x}{\sqrt{N}} \qquad SE_r = \frac{(1 - r^2)}{\sqrt{N}}$$

$$SE_\sigma = \frac{\sigma_x}{\sqrt{2N}} \qquad SEE_y = \sigma_y\sqrt{1 - r^2}$$

$$SE_d = \sqrt{\frac{\sigma_1^2}{N_1} + \frac{\sigma_2^2}{N_2}}$$

$$R_{x/y} = \left(\bar{x} - \left[r_{xy}\left(\frac{\sigma_x}{\sigma_y}\right)\bar{y}\right]\right) + \left(r_{xy}\left(\frac{\sigma_x}{\sigma_y}\right)y\right)$$

$$R_{y/x} = \left(\bar{y} - \left[r_{xy}\left(\frac{\sigma_y}{\sigma_x}\right)\bar{x}\right]\right) + \left(r_{xy}\left(\frac{\sigma_y}{\sigma_x}\right)x\right)$$

The formulas given for computing the above statistics are in a form especially suitable for machine calculation. For manual calculation the forms used by Fisher *(5)* or Tippett *(6)* are more convenient.

Studies of Laboratory Pulp Tests

The test results used in these studies were, bleachability as expressed by the permanganate number, and burst (mullen) and tear data from handsheets prepared as a part of usual laboratory beating test.

For the permanganate number tests the procedure as given by TAPPI Standard T 214 m-37 was followed. The beater tests were carried out in a 1-pound beater with suitable precautions covering such important items as uniform beater consistency and handsheets having uniform basis weight and good formation. The sheets were airdried on polished plates and tested after conditioning at 70 deg. F. and 50% relative humidity. The routine bursting and tearing test information was reported for each interval of beating as percent and also in terms of what has been called "burst value," "tear value," and "pulp value." Burst value is the sum of the burst tests at the 5- and 25-minute beating intervals expressed as per cent burst. The tear value is the sum of the tear tests for the same intervals expressed as per cent tear. The pulp value is the sum of the burst and tear values. This system of reporting pulp test information has been in use for some time as a ready means of expressing a rough characterization of pulps.

From the statistical standpoint it seemed desirable to use these terms, for the reason that their use would eliminate some of the variability inherent in tests made at a single interval of beating.

In order to include test values that might be considered more comparable to mill refining conditions, tear, and burst values at 400 cc. freeness (Green) were also used. These values were obtained from the plots of the burst, tear, and freeness data against time of beating.

The first study made involved the test results from 45 paired tests on spruce sulphite, unbleached and bleached. The original object of this study was to investigate the vague theory that has been held in some quarters that bleach value of sulphite pulps was related to the strength of the pulp. This problem was studied by Genberg and Houghton *(7)* who concluded from a tabulation of 311 tests on unbleached sulphite pulps, having different chlorine numbers, that bursting strength increased with higher chlorine numbers, that tear increased to a maximum and then decreased with increasing chlorine numbers. It seemed worthwhile in this connection to determine whether or not this relationship would be sufficiently close to allow the use of the bleach value as an indirect measure of pulp strength. Accordingly, means, standard deviations, coefficients of variability, and correlation coefficients showing the relation between bleach value and each of the variables were calculated. The results of these calculations are shown in Table I.

The first notable feature of Table I is that 540 individual test results have been condensed to 46 statistics, if the first eight columns that contain the necessary figures for ready interpretation, are considered. This is a condensation of 11.75 times.

The first two columns of Table I contain the familiar means or averages for each variable in each series. In considering the paired means from each series, there is a suggestion that pulp strength is being lost in the bleaching process. These differences will be tested for significance in a later example.

The paired standard deviations suggest either that the bleached pulps are somewhat less variable than the parent unbleached pulps or that they lend themselves to testing in such fashion that inherent variabilities of the method are smaller. The significance of each of these differences could be tested by calculating the standard error of the differences in each case and comparing the magnitude of the errors to that of the respective differences.

The coefficients of variability are useful not only in comparing variability between each series but also in allowing the comparison of the variability of one test with another. For example, in the unbleached

TABLE I.—INDIVIDUAL STATISTICS CALCULATED FROM GROUP OF 45 PAIRED PULP TESTS ON UNBLEACHED AND BLEACHED SPRUCE SULPHITE

Variable	Mean and standard error		Standard deviation and standard error		Coefficient of variability, %		Coefficient of correlation of bleach value with each vaiable and standard error		Regression coefficient of bleach value on each variable		Standard error of estimate of each variable from bleach value	
	Bl.	Unbl.	Bl.	Unbl.	Bl.	Unbl.	Bl.	Unbl.	Bl.	Unbl.	Bl.	Unbl.
B	14.70	14.70	2.33	2.33	15.90	15.90	....	....	....	....	....	....
	± .34	± .35	± .24	± .24	....	....	....	....	....	....	....	....
M	234.50	242.53	12.93	23.90	5.51	9.85	+0.585	+0.833	3.26	8.53	10.49	13.23
	±1.93	±3.65	±1.36	±2.58	....	....	± .098	± .047	....	....	....	....
T	196.90	214.86	17.26	21.48	8.77	9.99	+0.452	+0.357	3.37	3.28	15.40	20.07
	±2.57	±3.28	±1.82	±2.32	....	....	± .118	± .133	....	....	....	....
P	430.10	457.42	29.55	36.32	6.87	7.94	+0.799	+.757	10.19	11.79	17.77	23.72
	±4.40	±3.92	±3.11	±3.92	....	....	± .054	± .065	....	....	....	....
M400	130.80	135.05	10.44	12.88	7.98	9.54	+0.682	+.770	3.45	4.25	7.63	8.21
	±1.56	±1.96	±1.10	±1.38	....	....	± .081	± .062	....	....	....	....
T400	88.30	95.07	7.68	5.29	8.70	8.70	+0.563	+.359	1.85	1.15	6.29	6.52
	±1.17	± .80	± .79	± .54	....	....	± .103	± .133	....	....	....	....

Note: B = Bleach Value. B = 15.90. M = Burst Value. T = Tear Value. P = Pulp Value. M400 = Burst at 400 cc. freeness. T400 = Tear at 400 cc. freeness.

series burst value is as variable as tear value and bleach value is relatively more variable than any of the other tests.

The coefficients of correlation of bleach value with each of the other tests are of unusual interest because of the rather startling and far reaching conclusions that can be drawn from this information. The general magnitude of the coefficients when considered in relation to their standard errors leads at once to the confirmation of the original theory that bleach value is related to pulp strength. It should be recalled at this point that a perfect direct relationship would be represented by a coefficient of +1.00 and a perfect inverse relationship by a value of —1.00. Further consideration of these coefficients show that there is a considerably higher degree of association between pulp value and bursting strength than there is for tearing strength. The positive sign for each coefficient indicates that the relationships are direct—i.e., that within the range of bleachabilities encountered in this series of pulps, the higher the bleach value the higher will be the pulp strength. This raises the question of the increase in each strength factor that could be expected with each unit increase in bleach value. The regression coefficients supply estimates bearing on this question. For each unit increase in bleachability, 8.5 units increase in burst value in the case of the unbleached pulp and about 3.5 units increase in the case of the bleached pulp can be predicted. An increase of 5 units of bleach value would lead to an expected increase of 50 units of pulp value.

Further pursuing the idea of the close relationship between bleach value and pulp strength leads to the suggestion that laboratory beater tests be abandoned or decreased in the number of tests made and that the results from bleach value tests be used to predict pulp strength. In order to do this it would be necessary to establish a basis for converting bleach values into pulp strength test terms. This can be done by calculating the data for, and constructing a regression line of, any of the pulp-strength tests on bleach value. The deviation or scatter from this regression line that could be expected is furnished by the standard error of estimate. It should be noted that these values as shown in Table I are roughly of the order of magnitude of the standard deviations.

Figure 1 shows such a regression line representing the regression of burst value on bleach value for unbleached pulp. This figure has been constructed to show in another way the reduction of data. All of the individual burst value data have been entered on this graph to form a spot diagram. It is obvious that little positive information could have been derived from the spot diagram alone. An examination of the regression formula used in this case will reveal that it is an equation for a straight line. The first term is the usual origin term and the second part determines the slope. This fact prompts a word of caution at this point regarding the choice of the proper regression equation. Obviously, the one used in the present instance would be suitable only in cases where there is good evidence that the co-variation of the two variables indicates a straight line relationship. A simple, though rough test of this, can be obtained from a spot diagram or the general position of the entries in a correlation table. There are more rigorous mathematical test methods available, a discussion of which is outside the scope of this paper.

Effect of Change in Cooking Procedure on Pulp Quality

The main object of this investigation was to determine the effect on the pulp strength and uniformity of quality due to the installation of a positive circulating system on a sulphite digester. A further object was to confirm the results from the previous study.

The material for this investigation consisted of 49 routine laboratory pulp tests on unbleached spruce sulphite pulps cooked in one digester before the circulating system was installed and 49 cooks on the same species after the system was installed. No effort was made to exercise any control over the wood used during either period. The standard for bleachability was the same for both periods.

The statistical emphasis was shifted from a general exploratory study to a consideration of differences between the means of corresponding tests in the two series and the significance of these differences. The statistics calculated are shown in Table II. Inspection of Column 3 shows that all means for the circulated series are higher than the corresponding means for the Series A. This significance of these differences will be discussed presently.

A comparison of the respective standard deviations suggests that the variability in the circulated series is considerably less than in the case of Series A. It should be recalled that the standard deviation is, above all else, a measure of variability. The question of decreased variability in Series C is also shown by a comparison of the coefficients of vari-

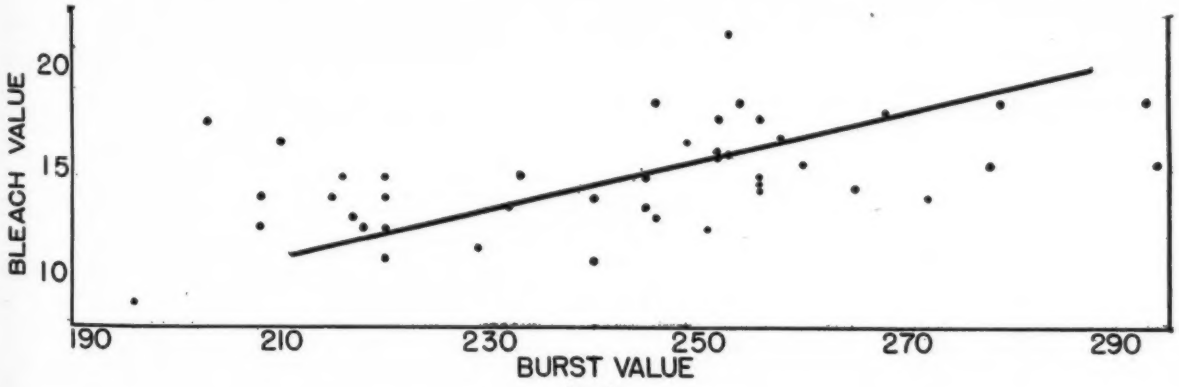

FIG. 1.
Regression Line—Burst Value on Bleachability of Unbleached Spruce

ability, Columns 9 and 10. The one exception to the decrease in variability in Series C, the bleach value, deserves special mention. It is felt that the circulating system on a digester should by its nature, reduce the variability of bleach values from cook to cook. It is recognized, however, that the final bleach value shown by any given cook, is to a great extent, dependent on the cook's judgment in determining the end points of the cooks. In the present circulated series it is known that difficulties were encountered in detecting the end points by traditional methods. The appearances of the pulps from this digester were deceptive after installing the circulating system when compared to pulps from other digesters. It is felt, therefore, that more experience with the circulating system will show an improvement in the variability of bleach values.

Column 6 in Table II shows the respective differences between the means for each variable. These data were obtained by subtracting the means in Series A from their corresponding means in Series C. This information was used to lay the foundation for the determination of any improvement in the pulp qualities as a result of the installation of the circulating system. There remained the problem of establishing the significance of those differences. Were the differences greater than might have been obtained as a result of normal variation in each case? To test this point the standard errors of the differences were calculated and are shown in Column 7. It will be noted that with the exception of bleach value, the differences are from four to six times their respective standard errors and hence can be considered reliable.

From the data presented in Table II the conclusion could be drawn that the installation of the circulating system had resulted in an increase in pulp strength. A second conclusion is that the pulps were more uniform with respect to strength variations from cook to cook as a result of using the circulating system than were the pulps produced with the noncirculating equipment.

It should be pointed out that whereas the present example involved the effects of altering the circulation in the digester, the same statistical treatment could be employed to study the effects of any other change in cooking or in any other process.

The information in Table II dealing with the means and standard deviations of the different pulp quantities of groups of pulps, produced during different periods, suggests another practical use of these statistics. In cases where routine test information is plotted to keep a continuous visual record, it is suggested that the standard deviations be plotted in addition to the means in order to record a measure of variability and changes therein.

Incidental to the main object of this study, the correlation coefficients involving bleach value and each of the other variables were calculated and are shown in Columns 11 and 12 of Table II. It will be noted that the coefficients for the A series generally agree with those of the previous study. There is, however, a startling difference shown by the series of coefficients representing the pulps cooked with circulation. For all practical purposes the coefficients for the C series, when considered in relation to their standard errors, are without significance and indicate no relation between bleach value and the various measures of pulp strength. The reason for this reversal in the results over those obtained with the old cooking system are not apparent.

A word regarding the testing of the various statistics for significance should be in order at this point. There are no definite rules on which all workers agree or that cover all circumstances. For practical purposes a minimum of twice the value of the standard error or three times the probable error is considered necessary in order to render a statistic significant. The number of tests being considered have a bearing on the reliability of statistics calculated therefrom. The general reliability of a statistic is related to the square root of the number of tests involved. A more accurate test for significance is the *t* test. This test has been discussed in an understandable manner by Goulden *(8)*. A table of values for *t* and the corresponding levels of probability occurs in most of the standard works on statistics.

Loss of Pulp Strength in the Bleaching Process

It was pointed out that in the study of paired tests on bleached and unbleached spruce sulphite pulps that it appeared that loss of strength was taking place during bleaching. In order to determine whether or not this loss was real and establish the magnitude of the loss, a group of 121 paired tests on unbleached and bleached spruce sulphite pulps were analyzed. The detailed results are not given for the reason that it was handled in the same manner as the earlier study on the effects of the circulating system installation. The differences between the various pulp-strength factors before and after bleaching were calculated and their significance tested. The conclusion was that a definite and significant strength loss was being sustained.

With a definite pulp-strength loss established as due to bleaching, it seemed desirable to investigate the question of whether or not the harder pulps sustained a greater or smaller relative loss in bleaching

TABLE II.—INDIVIDUAL STATISTICS CALCULATED FROM 49 PULP TESTS ON UNBLEACHED SPRUCE SULPHITE PULPS COLLECTED BEFORE AND AFTER THE INSTALLATION OF A DIGESTER CIRCULATING SYSTEM

Variable	Mean and standard error		Standard deviation and standard error		Difference of means	Standard error, difference of mean	Ratio difference to standard error	Coefficient of variability		Coefficient of correlation of bleach value with each variable	
	A	C	A	C				A	C	A	C
B	14.73	15.55	2.17	2.26	0.82						
	± .31	± .32	± .15	± .32	....	± .4477	1.82	14.74	14.53	....	....
M	233.20	250.76	22.63	13.02	17.55						
	±3.23	±1.86	±2.29	±1.31	....	±3.7302	4.70	9.70	5.19	+0.825	—0.008
T	217.57	229.86	17.46	11.09	12.29					± .046	± .143
	±2.49	±1.58	±1.76	±1.12	....	±2.9546	4.16	11.46	4.83	∓0.067	∓0.077
P	431.43	480.18	29.51	15.97	28.75					± .142	± .142
	±4.22	±2.28	±2.98	±1.61	....	±4.7930	6.00	6.54	3.33	∓0.429	∓0.232
M400	131.75	141.25	11.88	7.80	9.49					± .117	± .135
	±1.69	±1.11	± .12	± .79	....	±2.0308	4.68	9.02	5.52	∓0.526	—0.023
T400	96.10	101.20	7.03	4.23	5.10					± .103	± .142
	±1.05	± .60	± .71	± .43	....	±1.1719	4.35	7.32	4.18	∓0.142	∓0.331
										± .140	± .127

Note: A—Pulps prepared without circulating system. C—Pulps prepared with circulating system.

than the more easily bleached pulps. A series of 81 pulp tests on unbleached spruce sulphite and the tests on the same pulps after bleaching were examined. The difference between the various factors for each pair was taken and these differences were treated as the variable under investigation. The results are shown in Table III.

TABLE III.—SHOWING STATISTICAL ANALYSES OF LOSSES IN STRENGTH OF SPRUCE SULPHITE PULPS IN BLEACHING

Variable	Mean and standard error	Standard deviation and standard error	Coefficient of correlation of bleach values with each variable
B	15.22	2.45	.....
	± .27	± .19	.....
M	20.52	14.34	—.009109
	±1.59	±1.13	±.1111
T	34.98	21.87	—.26129
	±2.43	±1.72	±.1035
P	35.72	29.47	—.190536
	±3.27	±2.32	±.1071

The items of interest in Table III are the coefficients of correlation expressing the relationship or tendency toward association of bleach value with each of the other pulp strength factors. The coefficient for bleach value and burst value has no significance since it is smaller than its standard error. The cofficient for bleach value and tear value is small, indicating a low order of association. A comparison with its standard error indicates that it can be considered significant. The negative sign indicates that higher bleach values are associated with low values for tearing strength loss. The coefficient for bleach value and pulp value can be characterized by the same remarks except for significance. In this respect it is on the borderline.

The conclusions from this small study are that the loss of bursting strength in bleaching is in no way related to the bleach value of the parent pulps. There is at least a strong tendency for "hard" pulps to lose less tearing strength than "soft" pulps. These conclusions should be considered only within the range of bleach values included in the study and only within the other conditions involved in the pulping and bleaching used in processing these pulps.

Significance of Cuprammonium Viscosity Measurements on Sulphite Pulps

Thirty paired tests on unbleached sulphite and the same pulps bleached were used in this investigation. In addition to the pulp tests used previously, figures representing rate of change of burst, tear, and freeness were included. The actual units of burst developed during 25 minutes of beating and the units of change in tear and freeness for the same period were used. Cuprammonium viscosity measurements on both the unbleached and bleached pulps were made, using TAPPI Standard T 206 m-37, and the results were used in the present study.

TABLE IV.—INDIVIDUAL STATISTICS CALCULATED FROM A GROUP OF 30 PAIRED PULP TESTS ON UNBLEACHED AND BLEACHED SPRUCE SULPHITE PULPS

Variable	Mean and standard error		Standard deviation and standard error		Coefficient of correlation of viscosity with each variable	
	Unbl.	Bl.	Unbl.	Bl.	Unbl.	Bl.
V	50.03	34.62	25.06	29.85	....	....
	±4.58	±5.45	±3.24	±3.85	.....	.....
B	14.52	14.52	2.52	2.52	+.4196	—.0685
	±0.46	±0.46	± .33	± .33	±.150	±.182
M	231.60	227.67	22.40	19.17	+.42071	+.0694
	±4.09	±3.50	±2.89	±2.48	±.150	±.182
T	209.83	194.07	15.60	14.92	+.33039	+.4835
	±2.84	±2.72	±2.01	±1.93	±.163	±.140
P	441.43	421.73	29.72	26.49	+.490606	+.09276
	±5.43	±4.84	±3.84	±3.42	±.139	±.181
M_{25}	25.27	24.80	12.59	11.07	—.0062	+.2783
	±2.30	±2.02	±1.63	±1.43	±.183	±.168
T_{25}	24.90	25.40	8.08	6.15	+.5045	+.2032
	±1.48	±1.12	±1.04	±0.79	±.136	±.175
F_{25}	373.67	374.83	47.21	43.57	—.1623	—.3305
	±8.62	±7.96	±6.10	±5.74	±.134	±.163

Note: V = Viscosity in centipoise. T_{25} = Units tear change in 25 minutes beating. M_{25} = Units burst change in 25 minutes beating.

In presenting the results shown in Table IV the object is to point out some interesting possibilities rather than to draw definite conclusions. To bring out definite conclusions it would be preferable to examine a considerably larger group of tests. The statistics of greatest interest are the correlation coefficients shown in columns 6 and 7.

The coefficient for viscosity and the bleach value of unbleached pulp by its positive sign indicates that hard pulps will show higher viscosities. The same coefficient for the bleached pulp involves the bleach value of the unbleached pulp since it has no figure of its own. There is no significance to be attached to the value shown for the reason that it is less than its standard error.

In the cases involving burst value and pulp value for the unbleached pulps the coefficients are significant and indicate an association between the higher values of viscosity and higher burst and pulp values. For tear value, however, the low degree of association indicated could often be due to chance.

In the bleached series the conditions are reversed, in that tear value shows a high probability of a positive relation with viscosity. The coefficients for viscosity and the variables representing "rate of change" with beating are all below the significance level except for "tear change" in the unbleached series and "freeness change" in the bleached series. The results from this whole investigation lead to the conclusion that the interpretation of viscosity data in terms of pulp strength or refining behavior should be approached with caution. There seems to be some promise of success in the case of unbleached pulps that the intervening bleaching process destroys.

An additional approach to this general problem would be to study the decrease in viscosity to bleaching in relation to strength loss in bleaching.

Statistical Analysis of Some Unbleached Jack Pine Kraft Pulp Tests

The object of this study was to test a theory that has been encountered frequently among kraft paper and pulp mill men. This theory, as usually stated, says that raw or hard kraft pulps develop more bursting strength during mill refining than well cooked or soft pulps. It is assumed here that such an hypothesis might include a consideration of the rate of bursting strength development as well as the absolute level of bursting strength obtained.

The usual routine pulp tests from 169 different cooks of unbleached kraft pulps were investigated using the same statistical methods as used under Studies of Laboratory Pulp Tests. The results are shown in Table V.

Figures of Interest

The figures of interest are the correlation coefficients. The coefficient for bleach value and burst value, although low in magnitude, is significant according to the *t* test which indicated that in only two cases out of 100 would a similar value be obtained by chance. The interesting thing about this figure, as far as the original hypothesis is concerned, is that the sign is negative, indicating that higher bleach values are associated with lower burst values. The same comments apply to the coefficient appearing

TABLE V.—RESULTS FROM A STATISTICAL STUDY OF LABORATORY PULP TESTS ON UNBLEACHED KRAFT PULPS

Variable	Mean and standard error	Standard deviation and standard error	Coefficient of correlation of bleach value with each variable and standard errors
B	27.72	1.99	....
	± .15	± .11	....
M	299.58	25.95	—.1916
	±1.99	±1.41	±.074
T	351.64	48.26	+.0488
	±3.71	±2.63	±.077
P	631.50	54.85	—.1090
	±4.22	±2.98	±.076
M_{∞}	70.12	15.16	—.2121
	±1.17	±0.83	±0.74

Note: M40 = Units of burst developed in 40 minutes of beating.

last in Column 4 dealing with the rate of bursting strength development with beating. The coefficients for tear value and pulp value cannot be considered as showing any reliable degree of association.

In connection with the relation between bleach value and bursting strength, it should be mentioned that the range of bleach values included in this series was narrow. The extreme range was 10 units of permanganate number. However, the small standard deviation of the mean for bleach value indicates that the bulk of the pulps fell within a much smaller range.

It is difficult to relate the results obtained from the present analysis of kraft pulp tests with the results obtained by Lewis and Richardson *(9)*. In the present investigation the range of the lignin contents of the pulps as such is unknown. It is, undoubtedly, less broad than the range covered by Lewis and Richardson pulps and may have covered a general level of lignin content below the lower limit of the range used by Lewis.

Discussion

The scope of this paper has not allowed more than a superficial discussion of the precautions that should be observed on the general use of statistical methods. It should be emphasized that indiscriminate uses without some understanding of these precautions can give results that are very misleading. Fortunately, there are available a number of excellent books that are adequate to supply sufficient background to enable one to handle these useful tools. In the matter of supplying manipulative details, Goulden *(8)* has carried the matter further than most authors on the subject.

The relatively large number of tests in each of the individual studies reported here might create the mistaken impression that only large series of tests can safely be investigated using statistical methods. The reason for the use of large samples in the present instance was that each involved laboratory beater-strength tests that are known to be subject to random errors of considerable magnitude. This would introduce a second source of variation in addition to the highly variable nature of chemical wood pulp. In a large series opportunity is given for the random errors of the method of testing to cancel themselves out and thus leave the variations of the materials more isolated for study.

The facts are that the methods used in this paper can be modified for use on small samples of some types of test information to give reliable results.

Conclusions

Specific examples have been given to show the possibilities offered by the proper use of statistical methods to reduce voluminous routine test data to simple conclusions of measured reliability. It has been pointed out that the above object may be attained, even though the testing methods possess inherent random inaccuracies and the materials tested are variable. The different problems studied were: the relation between bleach value and strength factors in unbleached and bleached spruce sulphite pulps cooked with and without the use of positive circulation; loss in strength of spruce sulphite pulps in bleaching; relation between bleach value and the loss of strength in bleaching spruce sulphite; the relation between cuprammonium viscosity and: bleach value, pulp strength and pulp strength change with beating, in spruce sulphite pulps and the relation between bleach value and pulp strength and rate of burst development in unbleached Jack Pine Kraft pulps.

The technical data presented show that for the sulphite pulps studied, the bleach value is closely related to bursting strength and shows a good relation to tearing resistance for pulps cooked without forced circulation. Using forced circulation, however, these relationships largely disappear. For unbleached kraft pulps a low significant negative correlation between bursting strength and bleach value and rate of burst development and bleach value. Tearing resistance was found to be unrelated to bleach value.

In bleaching studies on sulphite pulps and bleach value of the unbleached pulps was found to show no relation to loss of bursting strength in bleaching but did show a slight negative relationship to loss of tearing resistance.

In a study of cuprammonium viscosity of unbleached and bleached pulps the former showed positive significant correlations with bursting strength, bleach value, and rate of change of tear with beating, in the unbleached pulps. In the case of the bleached pulps only tearing resistance and rate of freeness change showed any relation to bleach value.

Acknowledgment

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Correction of Refiner Detail

In the Technical Section of the PAPER TRADE JOURNAL 112, no. 8:134 (Feb. 20, 1941) the last sentence under the cross head "Haug Refiner" should be changed to read: "A similar step has been taken in the development of the Haug refiner which makes use of the principle of rolling friction for defibering the stock as against sliding friction employed in attrition mills and grinders. This results in a saving in power."

Job Evaluation*

By R. H. Rositzke[1]

(Concluded from the issue of March 13, 1941)

Wage Surveys

One condition becoming increasingly apparent is that the hourly wages paid by jobs or occupations is becoming a lesser factor in determining the wage position of a given company. We have found some cases where the average actual hourly take-outs of employees is as much as 40% above their stated base-rate pay. This difference is due to any number of differentials such as "cost of living index" adjustments, profit sharing distributions, vacation benefits, shift differentials, continuous overtime differentials. Each succeeding year seems to bring a larger number and percentage of special consideration payments. Such wage practices are decidedly different in various companies of an industry and the pattern changes considerably in different sections of the country. This means that hourly rates paid are but one portion of a sound appraisal.

The individual company, on the other hand is beset by a two-fold consideration: (1) What kind of wages and wage structures are competitors maintaining? If high or low is there a justifiable basis for wage position of the unit or units analyzed? (2) How do the wages paid in a given community compare with the practices of the locale? Does this influence the grade of personnel employed, its industrial relations or the relations with the public in that or those communities?

It is therefore of importance to a company to have a picture of its wage position: (1) Its relationship to the industry it is competing with. (2) Its relationship to the levels and practices of the community or communities in which it is operating.

At this point we differ with a great many examples of wage surveys with which we have come in contact. Frequently one will hear an executive say that such surveys give a good general idea of the over-all picture. Analysis frequently reveals grave misinformation.

We believe that a wage survey to be of real value must be designed to meet two needs: (1) It should completely define the personnel and special considerations position of each and every company or mill participating in the survey. (2) It should indicate the intermittent or steady nature of production and employment within the units of the survey participants as compared with the hourly wages paid so as to indicate annual take-outs. Overtime pay and practices should be shown. Incentive or bonus payments made through application of measurement plans should be shown as a payment in addition to the stated base rate pay.

A result of comparison between the rates paid in a community for jobs evaluated as comparable with the evaluated and actual wage rates paid by the company installing job evaluation, is shown in Fig. 5 and is based on a hypothetical case but does result from practical applications.

The base-wage level for the community, as indicated by the dot-dash line, is considerably higher than the base-wage level for the "Blank" Company, indicated by the dotted line, except for a few highly skilled occupations.

The wage spread between unskilled and skilled labor is much narrower for the community than for the company. As a specific example, there is a difference of $.42 per hour between the rate paid a broke handler and the rate paid a machine tender by the company. But in the community, the average difference in pay between these two jobs is only about $.27 per hour. This means that there is a greater incentive to advance for a broke handler working for the company.

In addition, the company operated under a wage incentive plan which enabled its workers to earn between 10 and 20% over their base wage. A third line, solid, represents actual hourly wages paid, including incentive earnings. As it happened, no other paper mill in the community paid incentive bonuses, so that the dot-dash base-rate line indicates the total hourly wages paid in the community. Comparing the solid line with the dot-dash community line, it is noted that the over-all wage level of the company is considerably higher than that of the community except for a group of unskilled occupations. The wage spread between unskilled and skilled occupations is even greater than in the base rate comparison.

The wage policy of the "Blank Company," as reflected by the solid line is a healthy one, first, because it typifies a fundamentally American concept of adequate reward for individual achievement and skill, and secondly, it places the company in a favorable competing position in the skilled labor market at a time when such labor is scarce.

The foundation for a proper community or industry wide survey, to be of any real value, must be carefully prepared. The survey should be fully supported by job definitions so that the different job contents are fully appraised, irrespective of job title, before wages are definitely compared.

A preliminary wage survey data sheet is shown in Fig. 6. In the first several surveys completed it is advisable that a representative of the company compiling the survey, personally visit the plants subscribing.

At the time that the company representative gathers the over-all personnel policy and wage data of the contributing companies, the company representative will personally check out the key wage-rate sampling jobs.

In order to cover this properly the surveyor outlines his sampling jobs before making the plant visits. Such "sampling definitions" are in turn condensed from those necessary for evaluation and instruction purposes.

The following is a model of a "paper-machine tender" sampling definition. Compare it with the company definition shown in Fig. 3.

* Presented at the Annual Meeting of the Technical Association of the Pulp and Paper Industry, Roosevelt Hotel, New York, N. Y., Feb. 17-20, 1941.

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Code 1 MACHINE TENDER Male

Supervise and control the operations of the wet end of a 3 system paperboard machine having 8 cylinders and making various grades of board ranging in caliper from 0.0125 to 0.064 and up to a trim of 102 inches. Use one, two, or three systems as necessary in the making of a solid sheet, a single-lined sheet, or a double-lined sheet with identical liners or a double-lined sheet with different liners. Control the operation of auxiliary equipment, such as jordans, machine chests, regulating box, screens, and mixing boxes. Coordinate the operation of the wet end with that of the beater room and that of the dry end. Supervise the work of all wet-end hands.

Your title .....

Base rate minimum ..... maximum ..... average .....

No. of empl. on this job ..... Ave. % incent. earned .....

Differences between this job and your comparable job .....

The jobs sampled comparatively should represent a coverage of the largest possible percentage of the employees in a community or industry, commensurate with the least reasonable number of sampling jobs. The results are tabulated in three subdivisions; (1) A comparison of personnel and industrial relations factors. This should include a comparison of special compensation or employee benefits. (2) A comparison of over-all wages. Direct additions to pay through such instruments as wage incentives should be shown apart from base-rate payments. (3) A detailed comparison of pay by the individual key jobs sampled should be shown.

Each and every contributor to the survey should receive a copy of the summary tabulations. However, unless the written consent of all participants is received, the individual results of one company should not be disclosed to the others.

The sampling of jobs definitely ties rates paid to definite specifications thereby avoiding erroneous or misleading job titles. This method uncovers other factors which distort wage comparisons such as preponderant learner or apprentice rates, and out and out mis-classification.

Wage Administration

Wage negotiations or differences resolve themselves into three major classifications.

1. Negotiations prompted by, and mainly for, the purpose of ironing out a series of alleged or actual wage-rate inequalities. When this type of negotiation takes a formal aspect, it usually implies a cumulation of unsettled individual rate disputes.

Sometimes the basic cause of wage disputes is not clearly understood nor clearly crystallized until job evaluation is brought into play. Frequently it is then realized that proper wage differentials rather than general wage increases was the fundamental need.

2. Negotiations which are prompted solely by a general increase demand. Such demands vary all the way from flat hourly rate increases throughout to percentage increases. Sometimes such negotiations are in turn clouded by many miscellaneous privilege or indirect financial demands.

3. Day in and day out discussions and differences of opinion as to the relative worth of different jobs. In all such discussions both management and employees frequently confuse the difference between the value of the job and the value of the man on the job. Such confusions, unless the plans of the company clearly show the difference, and patience is exercised in training employees in the difference, can readily be the source of misunderstanding and ill will between management and its employees.

Such differences can readily be composed by treating the individual case when and as it arises.

If an employee compares the rate on his job with the rate on another job, obviously overpaid and known to be such by management, say so candidly. Indicate that the job rate got out of line, place the other employees in the position of demanding a "rate cut" in the overpaid occupation. State that you are

CONFIDENTIAL

WAGE SURVEY DATA
HOURLY PAID OCCUPATIONS
COMPANY_____

Persons Employed	Pro ductive	Non-Pro-ductive	Both	Type of Incentive if any	% of empl. on incent.	Avg. incent. Earnings $	Avg. hrly. Earnings at base rate	Avg. Hrs. Worked per week	Avg. earnings per wk. at base rate	Avg. weeks worked per year	Avg. annual take-out per employee at Base Rate
Men											
Women											
Total											

Company policies with respect to supplementary compensation

Cost of living adjustment Yes_____ No._____ Basis_____
Profit Sharing Yes_____ No._____ Basis_____
Paid vacations Weeks after _____ years; _____ Weeks after _____ years.
Pay for sick leave Yes_____ No._____ Basis_____
Christmas Bonuses Yes_____ No._____ Basis_____
Paid Holidays Yes_____ No._____ What Holidays?_____
Pay for service in National Guard Yes_____ No._____ Basis_____
Pension Plan Yes_____ No._____ Basis_____
Differential for shift work Yes_____ No._____ Basis_____
Other benefits
Overtime _____% After_____Hrs. per day _____% After_____Hrs. per week_____% for Saturdays Sundays or Holidays

Standard Weekly Hours

	1st Shift	2nd Shift	3rd Shift
Productive			
Maintenance			
Power Plant			
Watchmen			

Form of collective bargaining_____ Written agreement?_____
Minimum wage: male_____ female_____
Starting rate differential for other than unskilled occupations_____
How long before full rate is paid?
Any general change in wage rate during past 6 months? Yes_____ No_____
What change?_____ Date of change_____

What payroll deductions are made, Social Security taxes excluded? Group Insurance _____ Hospit. Insur._____ Laundry_____ Savings_____
Red Cross_____ Community Chest _____ Union Dues _____ Other _____

General Company Policies

Layoffs on basis of seniority? Yes_____ No _____ How is length of service computed?_____
Apprenticeship course in operation? Yes_____ No_____ How are apprentices paid?_____
Foremen training course in operation? Yes_____ No _____ How often do they meet?_____ On Company time?_____
Hiring ages: _____to _____ years (Male) _____ to _____years (Female)
How much prior notice of layoff is given?_____
Are workers paid when called in and no work is available?_____ How Much?_____
Are married women hired?_____ Are married women in your employ?_____
Is a nurse available for first aid?_____ First aid room (s) available?_____

FIG. 6
Wage Survey Outline

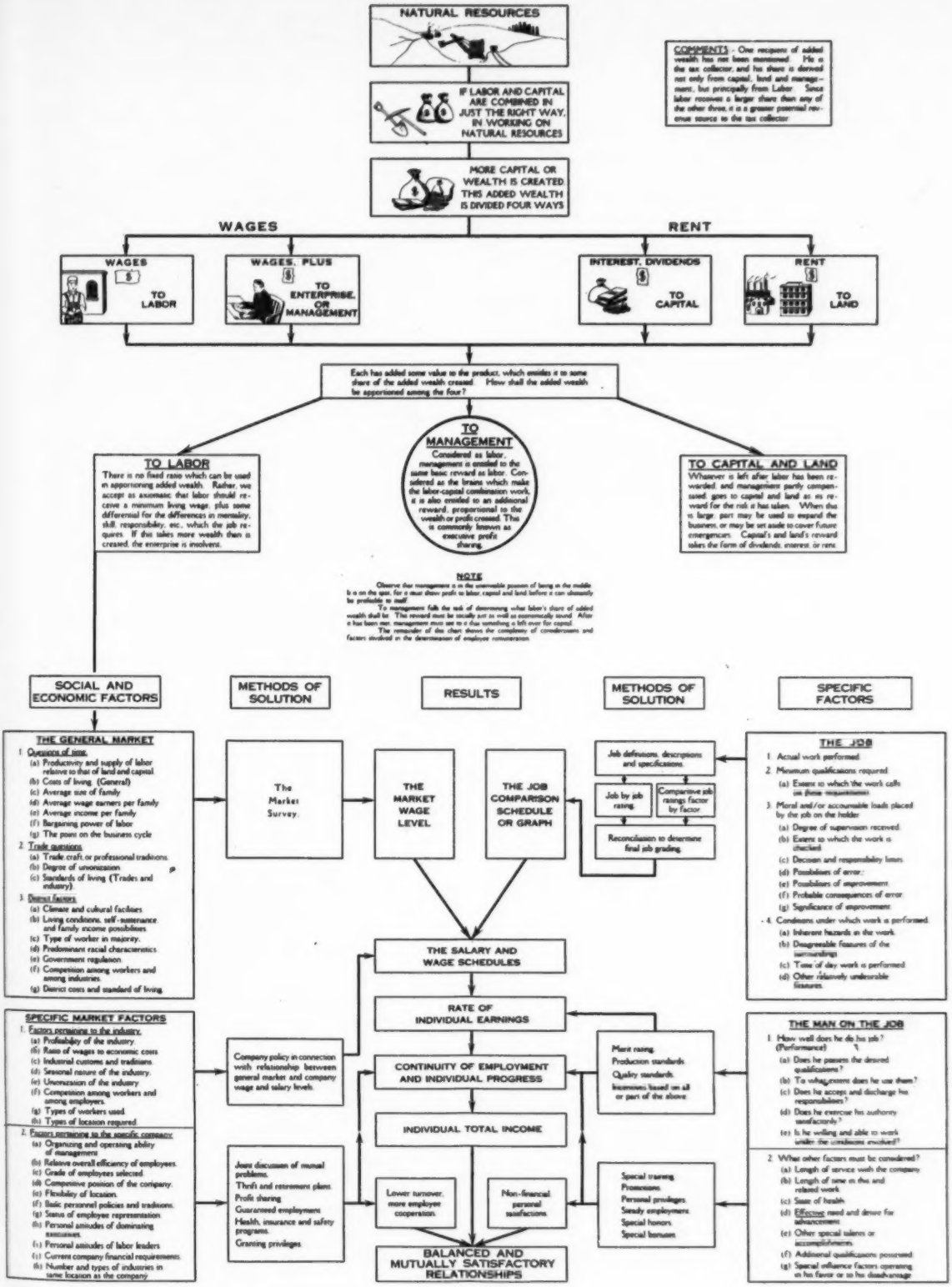
NATURAL RESOURCES
IF LABOR AND CAPITAL ARE COMBINED IN JUST THE RIGHT WAY, IN WORKING ON NATURAL RESOURCES
MORE CAPITAL OR WEALTH IS CREATED. THIS ADDED WEALTH IS DIVIDED FOUR WAYS
COMMENTS - One recipient of added wealth has not been mentioned. He is the tax collector, and his share is derived not only from capital, land and management, but principally from Labor. Since labor receives a larger share than any of the other three, it is a greater potential revenue source to the tax collector.
WAGES
RENT
WAGES TO LABOR
WAGES, PLUS TO ENTERPRISE, OR MANAGEMENT
INTEREST, DIVIDENDS TO CAPITAL
RENT TO LAND
Each has added some value to the product, which entitles it to some share of the added wealth created. How shall the added wealth be apportioned among the four?
TO LABOR
There is no fixed rate which can be used in apportioning added wealth. Rather, we accept as axiomatic that labor should receive a minimum living wage, plus some differential for the differences in mentality, skill, responsibility, etc., which the job requires. If this takes more wealth than is created, the enterprise is insolvent.
TO MANAGEMENT
Considered as labor, management is entitled to the same basic reward as labor. Considered as the brains which make the labor-capital combination work, it is also entitled to an additional reward, proportional to the wealth or profit created. This is commonly known as executive profit sharing.
TO CAPITAL AND LAND
Whatever is left after labor has been rewarded, and management partly compensated, goes to capital and land as its reward for the risk it has taken. When this is large, part may be used to expand the business, or may be set aside to cover future emergencies. Capital's and land's reward takes the form of dividends, interest, or rent.
NOTE
Observe that management is in the unenviable position of being in the middle. It is on the spot, for it must show profit to labor, capital and land before it can ultimately be profitable to itself.
To management falls the task of determining what labor's share of added wealth shall be. This reward must be socially just as well as economically sound. After it has been met, management must see to it that something is left over for capital.
The remainder of this chart shows the complexity of considerations and factors involved in the determination of employee remuneration.
SOCIAL AND ECONOMIC FACTORS
METHODS OF SOLUTION
RESULTS
METHODS OF SOLUTION
SPECIFIC FACTORS
THE GENERAL MARKET
1. Questions of time.
(a) Productivity and supply of labor relative to that of land and capital.
(b) Costs of living. (General)
(c) Average size of family.
(d) Average wage earners per family.
(e) Average income per family.
(f) Bargaining power of labor.
(g) The point on the business cycle.
2. Trade questions.
(a) Trade craft, or professional traditions.
(b) Degree of unionization.
(c) Standards of living. (Trades and industry).
3. District Factors.
(a) Climate and cultural facilities.
(b) Living conditions, self-sustenance and family income possibilities.
(c) Type of worker in majority.
(d) Predominant racial characteristics.
(e) Government regulation.
(f) Competition among workers and among industries.
(g) District costs and standard of living.
The Market Survey.
THE MARKET WAGE LEVEL
THE JOB COMPARISON SCHEDULE OR GRAPH
Job definitions, descriptions and specifications.
Job by job rating.
Comparative job ratings factor by factor.
Reconciliation to determine final job grading.
THE JOB
1. Actual work performed.
2. Minimum qualifications required.
(a) Extent to which the work calls on these requirements.
3. Moral and/or accountable loads placed by the job on the holder.
(a) Degree of supervision received.
(b) Extent to which the work is checked.
(c) Decision and responsibility limits.
(d) Possibilities of error.
(e) Possibilities of improvement.
(f) Probable consequences of error.
(g) Significance of improvement.
4. Conditions under which work is performed.
(a) Inherent hazards in the work.
(b) Disagreeable features of the surroundings.
(c) Time of day work is performed.
(d) Other relatively undesirable features.
THE SALARY AND WAGE SCHEDULES
RATE OF INDIVIDUAL EARNINGS
CONTINUITY OF EMPLOYMENT AND INDIVIDUAL PROGRESS
INDIVIDUAL TOTAL INCOME
BALANCED AND MUTUALLY SATISFACTORY RELATIONSHIPS
SPECIFIC MARKET FACTORS
1. Factors pertaining to the industry.
(a) Profitability of the industry.
(b) Ratio of wages to economic costs.
(c) Industrial customs and traditions.
(d) Seasonal nature of the industry.
(e) Unionization of the industry.
(f) Competition among workers and among employers.
(g) Types of workers used.
(h) Types of location required.
2. Factors pertaining to the specific company.
(a) Organizing and operating ability of management.
(b) Relative overall efficiency of employees.
(c) Grade of employees selected.
(d) Competitive position of the company.
(e) Flexibility of location.
(f) Basic personnel policies and traditions.
(g) Status of employee representation.
(h) Personal attitudes of dominating executives.
(i) Personal attitudes of labor leaders.
(j) Current company financial requirements.
(k) Number and types of industries in same location as the company.
Company policy in connection with relationship between general market and company wage and salary levels.
Joint discussion of mutual problems.
Thrift and retirement plans.
Profit sharing.
Guaranteed employment.
Health, insurance and safety programs.
Granting privileges.
Lower turnover, more employee cooperation.
Non-financial personal satisfactions.
Merit rating.
Production standards.
Quality standards.
Incentives based on all or part of the above.
Special training.
Promotions.
Personal privileges.
Steady employment.
Special honors.
Special bonuses.
THE MAN ON THE JOB
1. How well does he do his job? (Performance)
(a) Does he possess the desired qualifications?
(b) To what extent does he use them?
(c) Does he accept and discharge his responsibilities?
(d) Does he exercise his authority satisfactorily?
(e) Is he willing and able to work under the conditions involved?
2. What other factors must be considered?
(a) Length of service with the company.
(b) Length of time on this and related work.
(c) State of health.
(d) Effective need and desire for advancement.
(e) Other special talents or accomplishments.
(f) Additional qualifications possessed.
(g) Special influence factors operating in his favor or to his disadvantage.

FIG. 7
The Why of Job Evaluation

assuming what seemed a fair policy; not to cut rates until new employees were placed on the job or the job was reorganized or fundamentally changed.

Where the job rates are in proper relationship and complaints arise, take the interested employees through a simplified evaluation of the relative requirements of the jobs in question. If even this does not convince, offer such employees a crack at the other job when the opportunity presents itself. The care exercised in setting up the original evaluations will prove a quite certain insurance against wholesale requests along such lines.

General Wage Contract Negotiations

As previously outlined such negotiations are fostered primarily on one of two bases, namely: a demand for improvement in distribution of wages as between different occupations, and a demand for a general wage increase without regard to any consideration of job rate inequalities.

Rate Adjustment Basis

In entering an adjustment type of wage negotiation, the industrial relations function should prepare management and deal with the problem in the following manner:

Prepare a schedule which compares actual job rates by jobs with those which should or are to be paid on the proposed basis or bases. (Calculate the percentage of payroll increase on various bases. Show the approximate percentage of employees affected by operating divisions.)

Have a summary of the relative value of jobs based on job evaluation on hand in case of disputes as to the relative difficulty of different jobs.

As a final backing have the indexed file of individual job rating sheets available should a dispute arise as to an individual job or jobs.

General Rate Increase Basis

Such demands usually take one of two forms, a demand for a flat cents per hour increase for all jobs or a percentage increase.

The flat rate per hour increase, although it may temporarily seem like a lower-cost method, is ultimately costly to a company employing a large proportion of both unskilled and skilled labor. It reduces the rate spread between the unskilled and skilled workers. Turnover or change in union representation, if this policy is consistently followed, will more than offset initial gains.

Once a company has established fair wage relationships as between occupations, the percentage type of wage increase remains the soundest.

Policies Underlying Wage Negotiations

The company, in all of its wage negotiations, should have some definite concept of the wage position which it can or is willing to take. Amongst the many considerations, these factors should be considered.

The company wishes to primarily stress hourly take-outs based on going rates in the community.

It will attempt to follow a policy of maintaining as large a spread as possible between unskilled or skilled labor compatible with legal requirements.

It will deal primarily on the basis of weekly or annual employee earnings.

It will stress and show the equivalent values of other benefits such as insurance, vacations with pay, pensions, etc.

The wage practices of the industry will be stressed as a competitive influence.

It will attempt to stress its non-financial incentives such as promotion in a growing concern, recognition of special training courses taken voluntarily by employees and the personal management angle.

Recognition of the effect of cost of living on the wage dollar may or may not be directly discussed. (*See* Cost of Living section.)

The effect of "technological" changes on the attitude of workers may or may not be coped with directly.

When the determinations have been arrived at they should be carefully examined in light of the findings developed through job evaluation, the community wage survey, and wage surveys of the industry. A position should then be finally arrived at which is compatible with all the known factors.

The position should in turn be supported by crystallization of policies relative to such factors as seniority, employee wage rate determinations as between man and job rates, the various differentials for shifts and overtime, and wage and personnel policies as to conscripted employees.

The various factors and their relationship to the entire wage and personnel consideration is shown in Fig. 7.

Rate Classes or Grades

There are two basic methods for increasing wage rates or establishnig job rate classifications on an orderly basis. In some cases a combination of the two bases has been resorted to. One is a flat rate per hour increase or differential for all jobs or employees. The other is a percentage increase based on the relative base rates of different job classes.

Many proponents of sound wage administration practices have a decided preference for the percentage method. Where wage increases are under consideration the jobs having the greatest responsibility and normally the higher pay are given an increased weekly take-out commensurate with their base pay. On the other hand during periods of pay reduction they must take larger weekly take-out reductions for jobs which come in classes having greater managerial characteristics. A proper spread is maintained between skilled and unskilled jobs thereby protecting your labor supply in the higher skilled groups. An incentive is constantly offered in your wage structure for the assumption of greater responsibility by workers through advancement in duties and position.

The wider the spread in rate classes, the less will be the payroll control and transfer effort. However, if the jumps are great the degree of interim rate advances will be too infrequent for ambitious workers.

A comparison of the number of rate classes or grades required with different basic differentials is shown for per hour increase basis for 2c, 2½c, 3c, 5c, and 6c and 5%, 7½%, and 10%. As stated, the percentage differential class basis is preferable.

TABLE III.—STEP RATE CLASSIFICATIONS

(Based on various wage differentials)

Hourly Rate Differentials							
2c	2½c	3c	5c	6c	5%	7½%	10%
.35	.35	.35	.35	.35	.35	.35	.35
.36	...	.37	...	...	.36	...	...
.38	.375	.39	...	...	.38	.37	...
.40	.40	.40	.40	.40	.40	.40	.40
.42	.425	.42	.45	.42	.42	.43	.44
.44	.45	.45	.50	.48	.44	.46	.48
.46	.475	.48	.55	.54	.45	.49	.53
.48	.50	.51	.60	.60	.46	.53	.58
.50	.525	.54	.65	.66	.48	.57	.64
.52	.55	.57	.70	.72	.50	.61	.70
.54	.575	.60	.75	.78	.53	.66	.77
.56	.600	.63	.80	.84	.56	.71	.85
.58	.625	.66	.85	.90	.59	.76	.94
.60	.65	.69	.90	.96	.62	.82	1.03
.62	.675	.72	.95	1.02	.65	.88	1.13
.64	.700	.75	1.00	1.08	.68	.95	1.24
.66	.725	.78	1.05	1.14	.71	1.02	1.36
.68	.75	.81	1.10	1.20	.75	1.10	...
.70	.775	.84	1.15	1.26	.79	1.18	...
.72	.800	.87	1.20	...	.83	1.27	...
.74	.825	.90	...	...	.87	...	...
.76	.85	.93	...	...	.91	...	...
.78	.875	.96	...	...	.96	...	...
.80	.90	.99	...	...	1.01	...	...
.82	.925	1.02	...	...	1.06	...	...
.84	.95	1.05	...	...	1.11	...	...
.86	.975	1.08	...	...	1.17	...	...
.88	1.00	1.11	...	...	1.23	...	...
.90	1.025	1.14	...	...	1.29	...	...
.92	1.05	1.17	...	...	...	...	...
.94	1.075	1.20	...	...	...	...	...
.96	1.10	1.23	...	...	...	...	...
.98	1.125	1.26	...	...	...	...	...

The following shows how the rate grades would develop on the 8 different bases. On this schedule, the rates above the black line were developed on an arbitrary basis, in order to preserve the $.35 and $.40 rates on every increase basis. It should be noted that all rates have been taken to the nearest cent, (except for 2½c increases). This simplifies payroll calculations.

After the evaluation basis and major rate inequalities have been established, future wage adjustments are simplified. If for instance the 5% wage grade differential is assumed, a 5% wage increase given at some future date would only require shifting all jobs up one labor grade.

Cost of Living Index

The use of the cost of living index is optional insofar as job evaluation is concerned. It is used by some companies in two different ways dependent upon their respective viewpoints and wage administration philosophies. The two primary methods are:

1. It is maintained as an index compared with the over-all actual earnings of the workers and a real wage calculation is made. It is not tied in directly to the computation of wages but serves to constantly inform management of the relative pressure on earnings by the cost of living. This permits management to make independent and timely wage adjustments upward, without undue worker pressure or influence. It is impotent, however, on downward gradings for not being tied in directly it was not sold on this basis to the employees.
2. It is tied in directly with pay procedure. Payrolls are currently adjusted by the percentage of rise or decrease in the cost of living. It is advisable to introduce such a procedure during times of rising living costs and acquaint all employees with the basis of computation so that the policy will hold water during periods of falling costs of living. It is the opinion of consultants that such adjustments should not be made on any less than 5% swings.

Although any one of several indexes developed by national statistical bodies may be sufficiently direct for companies operating mills in the larger centers, they are not satisfactory in many of the smaller communities.

Evaluated Class Range Points	Job Title
80-120	Janitor
120-160	Truck Drivers Helper, Laboratory Janitor, Night Watchman
160-200	Broke Helper, General Yard Labor, Air Compressor Operator, Concrete Mixer Operator, Coal Crusher Operator
200-240	Beater Man, Pulp Weighman, Printer
240-280	Shipping Crew, Boiler Firemans Helper, Pneumatic Drill Operator
280-320	Fireman
320-360	
360-400	Truck Maintenance
400-440	Truck Driver, Finisher, Shipping Leader, Oiler, Boss Painter
440-480	Plumber, Steamfitters Helper, Electrician Helper
480-520	Tester
520-560	Extra Hand, Winder Man, Crane, Locomotive Operator
560-600	
600-640	
640-680	Beater Boss
680-720	Roll Grinderman, Brick Layer
720-760	Boiler Fireman, Spare Hand
760-800	Back Tender, Plumber and Steamfitter
800-840	Carpenter, Mill Machinist
840-880	Electrician
880-920	
920-960	Machine Tender

FIG. 8
Promotion Sequence

We have developed a highly simplified procedure for determining this index in smaller communities which nevertheless maintains better than 95% of the accuracy of commonly accepted indexes. Beyond this, the contents of these indexes have been modernized so that they can be discussed with workers in terms of modern living conditions.

Figure 7 shows the factor of evaluation related to a complete consideration of a company's industrial relations position and the position which the various factors discussed bear in relationship to the total problem.

Promotion Sequence

It is the practice to show the relative position of all jobs, based on evaluation, as a training and personnel aid. Charts are most valuable, and in a preliminary sense, for explaining, in a general way, what jobs employees should learn and work at if if they wish to advance in the company. The definitions supporting the job evaluations further describe the eligibility requirements for each and every job. The plan proves even more valuable as a general guide in selecting candidates for promotion who require a minimum of training time.

It is a quick first line approach to the training problem and serves as a logical starting point for developing sounder methods for the initial selection of employees and suggested courses of training for their betterment.

Figure 8, a sample paper mill promotional sequence chart, indicates one method for plotting various jobs in relation to their evaluated positions. Such sequences are in turn modified for differences in aptitude required for the various types of jobs.

Problems of the Paper Industry

The paper industry is in a difficult position inasmuch as production requirements are peaking, organization of its rank and file of workers increasing, and in the main it will be difficult to classify the main body of the industry as an essential defense element.

Skilled Labor Requirements

The quickest first approach to production increase is to increase the production of present equipment. Many manufacturers will have to resort to one of several courses to accomplish this result, such as, increase the working hours of existing personnel with attendant excessive costs of overtime and long term strain on employees, the introduction of an increased supply of skilled workers or the training of employees into higher skilled occupations, the induction of unskilled labor into semiskilled occupations.

A properly developed job evaluation plan is of great aid in outlining the best course to follow. A well rounded plan provides or defines the natural sequence of promotion in training workers into higher skilled jobs; the essential characteristics which such an advancing worker should possess; and the exact description of duties which a worker must satisfactorily discharge. The job definition serves as a definite instruction sheet clarifying occupational requirements.

Importance of Training Aids

The present supply of skilled labor is rapidly be-

ing exhausted. The supply is being reduced through the draft and increased wage competition of defense industries for skilled maintenance men. It is difficult for this industry to attract skilled labor from others because defense industry is paying generally higher wages, patriotic motives have a bearing, there is glamor in growing industries such as aviation.

Conclusions

Definite evaluation of all paper mill jobs prepares a basis for making intelligent wage surveys comparative to other paper mills and other industrials competing for its skilled workers. It does this on a defined basis thereby averting hysterical wage increases or the maintenance of subnormal rates on certain occupations, or in the general wage level.

The evaluations give a defined basis to a company for establishing sound wage policies in respect to: (1) offering employees wages which are proportional to the skills and difficulties involved in their jobs; (2) giving a definitely scaled measurement for comparing pay on its occupations with those paid by other paper mills in the same or different communities (without evaluation such comparisons are of but little value when one considers the difference in operating job requirements and peculiarities on a given type of job in different mills); (3) it enables management to show its personnel just where it is headed because through job evaluation the sequence of advancement both as to job and pay is clearly shown; (4) it gives management and labor a common ground for the discussion of all work factors surrounding all jobs and employees, and it becomes the focal point of a sound industrial relations program; and (5) having established a sound basic occupational rate differential plan, it is a logical starting point for a summary of all other company personnel and extra compensation benefits.

Lake States TAPPI Discusses Moisture

The Lake States Section of the Technical Association of the Pulp and Paper Industry met at the Conway Hotel, Appleton, Wis., on Tuesday evening, March 11, 1941. Martin L. Downs of the Thilmany Pulp and Paper Company presided as chairman.

K. R. Knoblauch and D. C. Culver of the Brown Instrument Division of the Minneapolis-Honeywell Regulator Company of Pittsburgh, Pa., presented a paper on "Some Notes on the Measurement of the Moisture Content of Paper." The paper covered the application of equipment developed by the Brown Instrument Division.

Among those present were J. W. Appling, Leslie H. Andrews, Clyde A. Benson, Paul Boronow, Donald R. Cushman, Donald L. Calkins, D. C. Culver, H. Y. Charbonnier, B. Cowan, H. C. Crandall, David W. Choate, H. C. Crane, James D. Clark, F. C. Damp, H. P. Dixson, M. L. Downs, J. A. Extrom, G. F. Enderlain, J. R. Fanselow, John Graff, J. W. Grimes, A. T. Gardner, W. S. Grimes, E. W. Galins, George Hrubecky, Ray N. Hollands, K. D. Hay, I. H. Isenberg, B. C. Jacobi, Arthur Jelinke, A. A. Jacobs, L. J. Johnson, Peter E. Jones, K. R. Knoblauch, Ray P. Kirkeide, J. P. Kreul, Otto Kuemmerling, F. X. Kreiling, A. E. Krogh, J. H. Levandoski, A. Lewenstein, John Logan, N. L. Malcove, Carl H. Nystrom, M. Phillips, S. Parsons, Randall Reuss, W. H. Swanson, Ralph Sell, H. J. Schweger, Harold B. Satman, Walter L. Shaw, Harry A. Schauer, H. A. Schmitz, Jr., George R. Sears, George H. Sheets, Robert M. Stuart, John Staniak, E. A. Timmerman, S. D. Wells, H. L. Voss, Charley Wagner, Don Westerbeke, J. C. Wollwage, and Lowell W. Zabel.

Kalamazoo TAPPI Discusses Inks

The Kalamazoo Valley Section of the Technical Association of the Pulp and Paper Industry met at the Park American Hotel, Kalamazoo, Mich., on Thursday, March 6, 1941. W. Kent Kidder of the Allied Paper Mills presided as chairman. P. J. Thoma of the E. J. Kelly Company of Kalamazoo was the principal speaker and talked on The Hydra Inks and Process. The Dupont movie "The Story of Neoprene" was shown.

The following were present: B. M. Baxter, O. D. Blessing, Harry Bradford, F. L. Brown, Olin W. Callighan, Glenn V. Cathey, Fred L. Chappell, Chris Coertse, A. M. Cole, L. Chas. Cook, N. J. Cowie, Paul de Guehery, Wm. J. Dial, W. P. Dohne, Homer Eaton, F. D. Elliott, Merton S. Fogerty, Richard D. Freeman, John W. Gilbey, W. F. Hathaway, A. E. Hays, H. Heath, J. A. Heenan, Earl M. Hill, Reg. Hurst, W. Kent Kidder, W. A. Kirkpatrick, Joe Loughead, C. L. Lufkin, Elbert G. Hilham, John L. Russell, V. I. Safro, G. C. Schmid, Hugh Smith, E. B. Taylor, Paul Thoma, S. Roy Turner, Joe Waber, Arthur Weinland, Frank Whittington, Merle R. Wilkins, James A. Wise, and A. E. Woollam.

Correction in TAPPI Standard

Washington, D. C., March 17, 1941

Editor PAPER TRADE JOURNAL:

I will appreciate it if you will publish the following:

At the time TAPPI Official Standard T 403 m-36, Bursting Strength of Paper, was written the Mullen type of testing instrument had a rubber ring on the upper clamp which had an orifice 1.24 inches in diameter. Carson and Worthington found, ("Critical Study of the Bursting Strength Test for Paper", National Bureau of Standards Research Paper No. 278, February, 1931) however, that under the clamping pressure the rubber ring expanded and closed the orifice to an approximate diameter of 1.20 inches. They recommended that the rubber ring be discarded to obtain greater exactness in the size of the orifice and that the diameter of the orifice be changed to 1.20 inches to avoid change in test values and the present instruments are made in this way. A revision of the standard is being prepared.

B. W. SCRIBNER, Chairman,
TAPPI Paper Testing Committee

A. W. Nickerson Injured

Arno W. Nickerson, well known consulting engineer of New York City, was injured near Fulton, N. Y., on March 11th as the result of an automobile accident during a blinding snowstorm. Mr. Nickerson was riding with Harry Smith of the Oswego Falls Corporation. Mr. Smith was not injured in the collision but his new car was demolished. Mr. Nickerson suffered a broken knee cap and will have to remain in the Lee Memorial Hospital, Fulton, N. Y., for several weeks.

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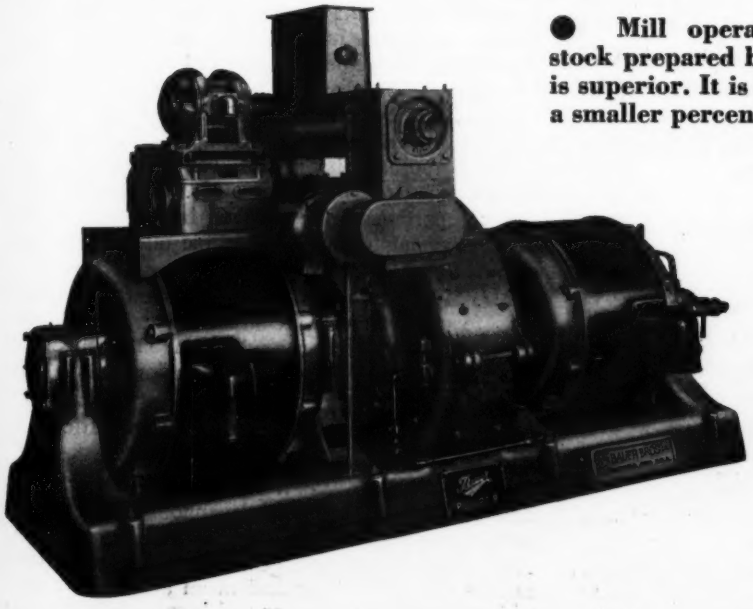

● **Mill operations have proved that board stock prepared by the Bauer Double Disc Pulper is superior. It is freer, forms better, and contains a smaller percentage of short fibers.**

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Giving Manifests of New York, Boston, Philadelphia and Other Ports of Newsprint, Wrapping, Writing, Coated, Blotting, Tissue, Strawboard; Bleached Sulphite More Acute—Some Grades of Old Waste Lower.

Effective September 30, 1939, under Treasury Decision 49,970, all publications, exchanges and trade associations, were denied access to import manifests at the New York Customs House. The Paper Trade Journal and other interested parties have vigorously protested this ruling, and as soon as the order of the Treasury Department is modified or rescinded, full publication of all manifests will be resumed in these columns. In the interim, the Paper Trade Journal is making every possible effort to gather all available information from manifests, at various outside sources.

NEW YORK IMPORTS

WEEK ENDING MARCH 15, 1941

SUMMARY

Cigarette paper .....133 cs.
Tracing cloth .....33 cs.

CIGARETTE PAPER

Gluckman & Strauch, ———, Fort de France, 3 cs.
———, ———, Barcelona, 30 cs.
F. Piper & Co., ———, Barcelona, 100 cs.

TRACING CLOTH

Keuffel & Esser Co., ———, Manchester, 33 cs.

RAGS, BAGGINGS, ETC.

A. H. Searle, ———, Manchester, 55 bls. flax waste, 31 bls. old bagging.
National City Bank, ———, Manchester, 70 bls. old bagging.
Brandwein Mazur Co., ———, Shanghai, 122 bls. cotton waste.
Castle & Overton, Inc., ———, Buenos Aires, 37 bls. old hemp, 51 bls. new hosieries.
Atlas Waste Manfg. Co., ———, Buenos Aires, 6 bls. rags.
Irving Trust Co., ———, Rio de Janiero, 77 bls. cotton residue.
1st., National Bank of Boston, ———, Rio de Janiero, 77 bls. cotton residue.
Atlas Waste Manfg. Co., ———, Havana, 15 bls. cotton sweepings.
National City Bank, ———, Buenos Aires, 9 bls. rags.
Irving Trust Co., ———, Vera Cruz, 116 bls. waste bagging.
J. Levy & Son, ———, Havana, 17 bls. rags.

OLD ROPE

Irving Trust Co., ———, Rio de Janiero, 61 bdls.

GLUE STOCK

Biological Products, Inc., ———, Mar del Plata, 201 bls.

CASEIN

H. S. Cramer, ———, Mar del Plata, 850 bags.

LOS ANGELES IMPORTS

WEEK ENDING MARCH 15, 1941

———, ———, Ocean Falls, 4,792 rolls newsprint.

Visit Hyde Park Mill

BOSTON, Mass., March 17, 1941—The Young Executives Club of the Boston Chamber of Commerce made a visit to the plant of Tileston & Hollingsworth at Hyde Park, Wednesday evening. Arnold Jenkins, Herbert Smith and Paul Brown of the Tileston & Hollingsworth organization showed the group through the mill.

Frank A. Augsbury Congratulated

OGDENSBURG, N. Y., March 17, 1941—Frank A. Augsbury, president of the Algonquin Paper Company, was the recipient of congratulations during last week upon the observance of his 76th birthday. The event was observed by a family dinner party but Mr. Augsbury was at his duties the next day as usual at the mill. He is now enjoying good health and except for a few colds has been in excellent condition throughout the winter. The company is operated under his personal supervision and takes a large part of his time these days. He is at the mill early each morning and supervises its operations. The entire plant is now operating twenty-four hours daily with prospects of continuing these schedules for some time. In addition to his mill duties he also supervises the business of the George Hall Corporation, and takes a direct interest in the operation of the firm which maintains a fleet of boats on the St. Lawrence River. Regarding the business outlook, he believes that it is difficult to determine just what will happen tomorrow as well as in the next year. Mr. Augsbury was born in Jefferson county on March 3, 1865, and has resided in this section all of his life.

Stein-Hall Announce Changes

Don C. Weber who served as assistant traffic manager under the late Edward E. Dore has been appointed traffic manager for the Stein-Hall Manufacturing Company. John R. McGinnis of the traffic department has been appointed assistant traffic manager. Mr. Weber has been active in traffic work since 1922. He was formerly associated with the Charles A. Krause Milling Company and the A. O. Smith Corporation both of Milwaukee, and later with Rosenbaum Bros. of Chicago. Mr. Weber joined the traffic department of Stein-Hall in August of 1937. He was appointed assistant traffic manager in May of 1938.

Mr. McGinnis was formerly assistant traffic manager for the Peanut Specialty Company of Chicago. He is an active member of the Committee on Claims and Shipping Documents in the Junior Traffic Club.

C. S. Bassett Co. Adds New Line

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., March 17, 1941—The Charles S. Bassett Company has recently announced that it has added a complete line of gummed sealing tapes to the regular business of cordage and twine. This new tape, called "Chevron," is packed in an attractive bundle, with red and blue wrapper and because of its exceptional adhesive qualities, is creating considerable interest among the paper trade.

NELIO PURE GUM ROSIN *and* Rosin Size

Two thoroughly dependable gum rosin products made by modern scientific methods and free from the faults of ordinary gum rosin.

Investigate NELIO. In addition to its outstanding qualities of performance, its superior virtues offer economies in handling.

NELIO IS UNIFORM—Standard grades never varying in color and quality from drum to drum or shipment to shipment.

NELIO IS BRILLIANT—Assuring lighter grades of paper.

NELIO IS DRY—The turpentine content is extremely low.

NELIO IS CLEAN—Absolutely free of dirt and foreign matter. Manufactured in stainless steel equipment.

NELIO IS FULL WEIGHT—Shipped in standard, non-absorbent leak-proof metal drums, in 100-lb. net weight paper bags or in fluid state in insulated tank cars. Nelio Rosin size is shipped in liquid state in drums or tank cars.

NELIO TECHNICAL SERVICE—Consulting service by experienced paper technicians is available to paper mills on request.

Write for samples and prices.

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New York Paper and Pulp Market Review

Trend In Paper Production and Demand Continues Definitely Upward, Despite Recent 3.6% Decline In Paper Board Output—Chemical Pulp Market More Active — Lower Grades Advance.

Office of the PAPER TRADE JOURNAL,
Wednesday, March 19, 1941.

Sales volume in the wholesale paper market continues to be well maintained at a relatively high level in many lines, according to reports received from many manufacturers' representatives, jobbers, and general paper merchants during the week.

The trend of industrial production, under the stimulus of production for defense needs, is expected to continue sharply upward. Some economists express the opinion that, as the transition of the nation from a peace economy to one approaching a war economy proceeds, the production of some goods not coming within the classification of military uses, will have to be curtailed. Any such restrictions may be expected, of course, to disturb in some degree the normal operations of concerns affected, but changes of this kind are inevitable in the circumstances.

The trend of general business activity declined to 121.5% for the week ended March 8, from 122.6% for the preceding week, compared with 100.1% for the corresponding week last year. Paper board production was among the components of the index to reflect a decline, the decline in paper board output being 3.6%.

Paper production for the week ended March 8 was estimated at 90.1%, compared with 83.4% for 1940, with 84.3% for 1939, with 70.1% for 1938, and with 90.6% for the corresponding week for 1937.

Paper board production for the week ended March 8 was 79.0%, compared with 69.0% for 1940, with 70.0% for 1939, with 60.0% for 1938, and with 84.0% for the corresponding week for 1937.

Consumer demand for many kinds of paper continues to be reported on the upward trend and at this date is about 3% above the high level at this period last year. The paper industry is considered to be in a very favorable situation. Production of many grades of paper is at about capacity and backlog orders are reporting to be accumulating in a few lines. Prices are firm and unchanged.

Demand for newsprint continues upward, with domestic production for the first two months of this year up 3,263 tons or 2% above the like period last year. In the same period, Canada produced 24,050 tons or 5% more. Stocks at domestic newsprint mills totaled 16,917 tons and at Canadian mills, 176,137 tons, at the end of February, 1941.

Mechanical Pulp

With adequate supplies of domestic and Canadian mechanical pulp this market is reported as easy at this date. Prices hold unchanged.

Chemical Pulp

The chemical pulp market is reported more active this week. The shortage on the higher grades is becoming more acute, with prime grades of bleached sulphite and unbleached sulphite scarce. Spot prices reflect an upward trend. Contract prices are stabilized at unchanged prices for the second quarter. Although a steadily increasing demand for paper for domestic consumption and for export is normally associated with an upward trend in prices, a higher contract price level for the third quarter of the year is problematical at this date.

Rags

No important change in the rag market has been reported this week. Mill buying is moderate. The roofing grades firm. Prices on all grades unchanged

Old Rope and Bagging

Trading in old rope is reported fair at this date. Mill buying of old Manila rope continues steadily and quietly, with prices firm and unchanged.

Quotations on old bagging are firm and this market is reported stronger in tone under the influence of the recent upward revision in new burlap and bag prices. No important change from prevailing market prices has been reported this week.

Old Waste Paper

The old waste paper market is strong, so far as the lower grades are concerned, with nothing important reported on the higher grades this week. Advances occurred in strictly folded news, which is currently quoted at from .67½ to .72½; on corrugated, quoted at from .60 to .65, and on No. 1 mixed paper, currently quoted at from .45 to .50.

Twine

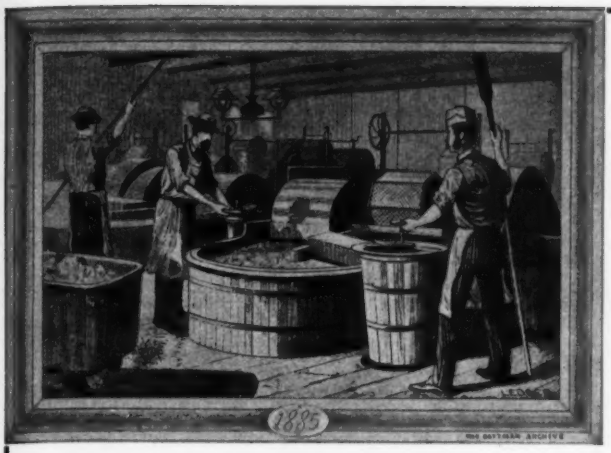
The twine market is reported quite strong at this date, with advances reported from several quarters of the trade on most standard grades of soft fiber twines.

Glass Pump for Small Installations

One of the most sensational developments of the past year was the Nash pump of glass, a 1½ x 2 inch centrifugal pump of "Pyrex" brand glass, produced jointly by Nash and the Corning Glass Works, and marketed by the Nash Engineering Company of South Norwalk, Conn.

The outstanding success of this pump in service created a demand for a smaller size, and a ¾ x 1 inch pump, with a capacity of 10 gallons per minute, has been perfected and is now available. This capacity is ideally adapted to the smaller installations and for laboratory and pilot plant service.

Like the larger pump, this new size is actually constructed of glass, volute, head and rotating impeller, and is fully transparent, and has the same advantages where corrosive liquids or liquids which must be kept chemically uncontaminated are to be handled. A unique mechanical seal replaces the conventional stuffing box, and a safety unloading device eliminates the possibility of fracture of the glass casing.



When

APPLETON FELTS FIRST WERE MADE
THIS WAS A MODERN PAPER MILL

As inventive genius was applied to the making of paper, hand methods gave way to machines designed for production. Year after year as progress was made, Appleton Felts have kept pace with this progress in paper making. Today Appleton Felts are standard for all those characteristics paper mills require in felts to make good paper.

APPLETON WOOLEN MILLS, APPLETON, WIS.

Good Winders are easy to operate

CAMACHINES are well designed Winders with convenient location of cutters, facilities for quick respacing of cutters, also for easy threading of web. Riding roll and rewind shaft are easily raised and lowered. All controls are handy to the operator. The capacity to produce good rolls is not left to the skill of the operator, but is built into the winder. Write for interesting folder.

CAMERON MACHINE COMPANY
61 Poplar St.
BROOKLYN, N.Y.

Slitting and Roll-Winding Machine Headquarters

MISCELLANEOUS MARKETS

Office of the PAPER TRADE JOURNAL,
Wednesday, March 19, 1941.

BLANC FIXE—Quotations on blanc fixe are firm and continue unchanged at prevailing market levels. Demand reported fair for the week. The pulp is currently quoted at $35 per ton, in barrels, at works; the powder is offered at $50 per ton, f.o.b., works.

BLEACHING POWDER—Prices on bleaching powder are firm with shipments reported in good volume for the week. Bleaching powder is currently quoted at $2 per 100 pounds, in drums, at works.

CASEIN—Quotations on casein are reported firm. Demand moderate for the week. Standard domestic casein, 20-30 mesh, is currently quoted at 12 cents per pound; 80-100 mesh, at 12½ cents per pound; all prices in bags, car lots. Standard Argentina casein is currently offered at 12 cents per pound. No quotations on French casein.

CAUSTIC SODA—Prices on caustic soda are unchanged. Shipments continue in steady volume. Solid caustic soda is currently quoted at $2.30 per 100 pounds; flake and ground at $2.70 per 100 pounds, in drums, at works.

CHINA CLAY—Quotations on china clay are firm and continue unchanged this week. Domestic filler clay is currently quoted at from $7.50 to $15 per ton; coating clay at from $12 to $22 per ton, at mines. Imported clay is quoted at from $13 to $25 per long ton, ship side.

CHLORINE—The demand for chlorine is reported heavy. Prices are firm and the market strong for the current week. Chlorine is currently quoted at $1.75 per 100 pounds, in single-unit tank cars, f.o.b., works.

ROSIN—The rosin market is reported as firmer with prices higher for the week, "G" gum rosin is currently quoted at $1.79 per 100 pounds, in barrels, Savannah. "FF" wood rosin is currently quoted at $1.79 per 100 pounds, in barrels, New York. Seventy per cent gum rosin size is quoted at $2.50 per 100 pounds, f.o.b., works.

SALT CAKE—Prices on salt cake are firm under a good demand with current quotations continuing nominal. Domestic salt cake is currently quoted at $17 per ton in bulk; chrome salt cake at $16 per ton. All prices in car lots, f.o.b., shipping point. The quotation of $16.50 per ton on imported salt cake continues nominal.

SODA ASH—Quotations on soda ash are firm and continue to conform to prevailing market quotations. Demand reported good. Quotations on soda ash in car lots, per 100 pounds, are as follows: in bulk, $.90; in paper bags, $1.05; and in barrels, $1.35.

STARCH—Prices on corn starch are firm and continue unchanged for the current week. Pearl is currently quoted at $2.90 per 100 pounds; powdered starch at $3 per 100 pounds; all prices in bags, car lots, f.o.b., Chicago.

SULPHATE OF ALUMINA—Quotations on sulphate of alumina are firm. Shipments reported in steady volume for the week. The commercial grades are currently quoted at $1.15 per 100 pounds; iron free at $1.60 per 100 pounds, in bags, car lots, f.o.b., works.

SULPHUR—Prices on sulphur are firm and continue to conform to prevailing market quotations. Annual contracts are currently quoted at $16 per long ton, f.o.b., mines. Spot and nearby car lots are quoted at $19 per ton.

TALC—Quotations on talc are firm and continue unchanged at prevailing market prices. Domestic talc is currently quoted at from $15 to $21 per ton, at mills. No quotations on imported talc.

MARKET QUOTATIONS

Paper

(Delivered New York)

News, per ton—			
Roll, contract	$50.00	@	—
Sheets	58.00	"	—
Kraft—per cwt.—Delivered Zone A			
Northern, Extra Quality	$5.25	@	$5.75
Superstandard	4.87½	"	5.25
Northern Standard Wrapping	4.37½	"	4.62½
Standard Wrapping	4.25	"	—
Tissues—Per Ream—Carlots			
White No. 1	.97½	"	—
White No. 1 M. G.	.95	"	—
White No. 1½	.80	"	—
White No. 2	.75	"	—
Anti-Tarnish M. G.	.80	"	—
Colored	.85	"	—
Kraft	.87½	"	—
Manila	.77½	"	—
Unbl. Toilet, 1 M.	3.75	"	—
Bleached Toilet	5.26	"	—
Paper Towels, Per Case—			
Unbleached, Jr.	2.10	"	—
Bleached, Jr.	3.60	"	—
Manila—per cwt.—C. l. f. a.			
No. 1 Jute	8.25	@	10.25
No. 1 Manila Wrapping, 35 lb.	5.25	"	—
No. 2 Manila Wrapping, 35 lb.	5.00	"	—
Boards, per ton—			
News	42.50	@	—
Chip	40.00	"	—
Sgl. Mla. Ll. Chip.	55.00	"	—
White Pat. Coated.	70.00	"	—
Kraft Liners	55.00	"	—
Binders Boards	73.00	"	80.00

The following are representative of distributors' resale prices:

Rag Content Bonds and Ledgers—White, Assorted Items, Delivered in Zone 1:

	Bonds		Ledgers	
100% Rag Ext. No. 1	$39.10 @	$46.00	$40.25 @	$47.25
100% Rag	31.05 "	36.50	32.20 "	37.75
85% Rag	.... "	....	29.90 "	35.00
75% Rag	23.60 "	27.75	24.75 "	29.00
65% Rag	.... "	....	21.65 "	26.25
50% Rag	17.55 "	21.50	18.70 "	22.75
25% Rag	14.65 "	17.75	15.80 "	19.25

Colors at $1.00 cwt. extra.

Sulphite Bonds and Ledgers—White, Assorted Items. Delivered in Zone 1:

	Bonds		Ledgers	
No. 1	$9.35 @	$11.50	$11.55 @	$12.75
No. 2	8.50 "	10.25	9.65 "	11.75
No. 3	8.05 "	9.25	9.20 "	11.25
No. 4	7.70 "	9.50	8.99 "	10.75

Colors $1.00 cwt. extra.

Free Sheet Book Papers—White, Cased Paper.

Delivered in Zone 1:

No. 1 Glossy Coated	$11.90	@	$13.50
No. 2 Glossy Coated	10.35	"	11.75
No. 3 Glossy Coated	9.55	"	11.00
No. 4 Glossy Coated	9.15	"	10.50
No. 1 Antique (watermarked)	9.05	"	10.50
No. 2 Offset	8.40	"	9.75
A Grade E. F.	8.20	"	9.50
A Grade S. & S. C.	8.45	"	9.75
B Grade E. F.	7.65	"	8.75
B Grade S. & S. C.	7.90	"	9.00
C Grade E. F.	7.35	"	8.50
C Grade S. & S. C.	7.60	"	8.75
D Grade E. F.	7.10	"	8.25
D Grade S. & S. C.	7.35	"	8.50

Ivory & India at $.50 cwt. extra.

Mechanical Pulp

(On Dock, Atlantic Ports)

No. 1 Imported—			
Moist	No prices		
Dry	No prices		
(Delivered)			
No. 1 Domestic and Canadian	40.00	@	42.00

Chemical Pulp

(On Dock, Atlantic, Gulf and West Coast Ports)

Bleached Sulphite (Domestic and Foreign)—			
Prime Bleached Sulphite	3.72½	@	3.87½
Prime Qualities—			
Easy-Bleaching Sulphite	3.17½	"	3.75
Strong Unbleached Sulphite	3.17½	"	3.75
News Grade, delivered Unbleached Sulphite	58.00	"	63.75
(On Dock, Atlantic Ports)			
Kraft Bleached	4.12½	"	—
Kraft Light & Strong	3.50	"	3.90
Kraft No. 1	3.40	"	3.80
(F. o. b. Pulp Mill)			
Kraft Domestic and Canadian	2.75	"	3.37½
(Delivered)			
Soda Bleached	3.30	"	—

Add 60 cents per short ton, dock charges for Albany; $2.50 for Lake Ports East and $3.50 for Lake Ports West of Mackinac Straits.

Domestic Rags

New Rags

(Prices to Mill f. o. b. N. Y.)

Shirt Cuttings—			
New White, No. 1	6.12½	@	6.37½
Silesias No. 1	4.50	"	4.65
New Unbleached	6.12½	"	6.37½
Blue Overall	4.15	"	4.50
Fancy	3.25	"	3.50
Washables	2.00	"	2.15
Mixed Khaki Cuttings	2.75	"	3.00
O. D. Khaki Cuttings	3.00	"	3.15

Old Rags

White, No. 1—			
Repacked	3.50	"	3.65
Miscellaneous	2.75	"	3.00
White, No. 2—			
Repacked	2.50	"	2.75
Miscellaneous	2.00	"	2.25
Thirds and Blues—			
Repacked	1.50	"	1.65
Miscellaneous	1.10	"	1.25
Roofing Rags—			
No. 1	1.15	"	1.20
No. 2	1.00	"	1.05
No. 3 (bagging)	.90	"	1.00
No. 4	.60	"	.65
No. 5A	.60	"	.65

Foreign Rags

All prices nominal.

New Rags

New Dark Cuttings	2.25	@	2.40
New Mixed Cuttings	2.00	"	2.20
New Light Silesias	5.50	"	5.75
Light Flannelettes	5.50	"	5.75
New White Cuttings	7.00	"	7.50
New Light Oxfords	4.00	"	4.50
New Light Prints	3.00	"	3.25

Old Rags

No. 1 White Linens	7.50	"	8.50
No. 2 White Linens	6.50	"	7.50
No. 3 White Linens	4.50	"	—

• View of Johnson Joints installed at Bedford Pulp & Paper Mill Co., Inc., Big Island, Va. No more steam fit troubles here.

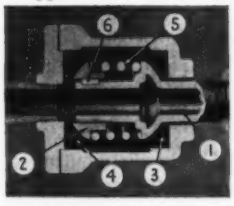
75 JOHNSON JOINTS
at Bedford Pulp & Paper Co.

BIG mills, smaller mills—in the north, in the south—from coast to coast—are turning to the Johnson Rotary Pressure Joint. The Bedford Pulp and Paper Co., Inc., for instance, is just one of a hundred mills that now use 50 or more Johnson Joints. Over fifty paper mills have purchased from 100 to as many as 760.

To win this widespread acceptance in just a few years, the Johnson Joint had to offer substantial benefits. It put an end to the constant oiling, adjusting and repacking of steam fits. It stopped the menace of misalignment, which wears old style steam fits so rapidly. More than that, it offered a simpler, neater way to provide for syphon drainage. There's a freedom of lateral movement built right in the Johnson Joint, to keep syphon pipe from rubbing on dryer journals.

HOW IT WORKS

Nipple (1) is fastened to roll of paper machine, calender or corrugator. Collar (2) is keyed (6) to nipple, but is free to slide back and forth. Carbon-graphite seal ring (3) and bearing ring (4) eliminate packing and are completely self-lubricating. Spring (5) is for initial seating only; in operation joint is pressure-sealed —adjusts itself automatically for most efficient operation.



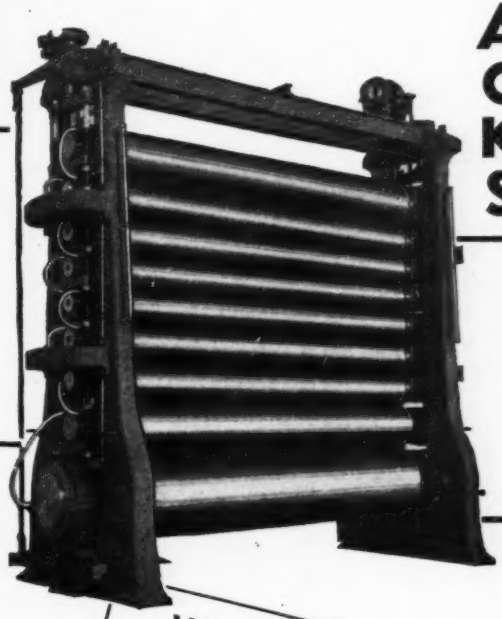
Write for new catalog

USE THE JOHNSON ELECTRAP

• Today's highest development in a trap for pumping or lifting service and draining systems under high vacuum. Electric operation removes stuffing boxes, floats and all other moving parts from trap chamber. Control valve gear is one compact assembly—can be mounted in any convenient location if trap chamber must be set in inaccessible position.

The Johnson Corporation
828 WOOD STREET JC THREE RIVERS, MICH.

LOBDELL CALENDER STACKS



"BEST BUY" say more than 300 modern paper mills who are users of LOBDELL Calender Stacks!

Here are easily operated machines . . . known for their accuracy and durability! Rolls are of chilled iron or "Puraloy" . . . stacks may be equipped to operate with either electric motor, hydraulic or ratchet lift—all controlled from the floor. The last word in trouble-free lubrication keeps maintenance to the minimum you like.

Details? Just write—

LOBDELL
CAR WHEEL COMPANY
105 Years in Business
WILMINGTON·DELAWARE

No. 4 White Linens.	2.25	@	3.25
No. 1 White Cotton.	4.25	"	4.75
No. 2 White Cotton.	3.25	"	3.75
No. 3 White Cotton.	2.50	"	3.00
No. 4 White Cotton.	1.90	"	2.20
Extra Light Prints..	2.00	"	2.40
Ord. Light Prints...	1.75	"	2.15
Med. Light Prints...	1.55	"	1.95
Dutch Blue Cottons.	2.25	"	2.50
French Blue Linens.	3.00	"	—
Checks and Blues...	2.00	"	—
Linsey Garments....	1.90	"	2.00
Dark Cottons.....	1.50	"	1.60
Old Shopperies.....	1.30	"	1.45
New Shopperies.....	1.45	"	1.50
French Blues	2.25	"	2.50

Old Rope and Bagging

(Prices to Mill, f. o. b. N. Y.)

Gunny No. 1—			
Foreign	Nominal		
Domestic	2.50	@	2.75
Wool Tares, light....	2.00	"	2.25
Wool Tares, heavy..	2.12½	"	2.25
Bright Bagging	2.25	"	2.50
Manila Rope—			
Foreign	5.25	"	5.50
Domestic	5.25	"	5.50
Jute Threads.....	2.75	"	3.00
Sisal Strings	2.10	"	2.35
Mixed Strings.....	1.10	"	1.20

Old Waste Papers

(F. o. b. New York)

Shavings—			
White Envelope Cuttings	3.10	@	3.25
Ordinary Hard White No. 1....	2.25	"	2.50
Soft White No. 1..	1.80	"	1.90
Soft White Extra..	2.50	"	2.60
Flat Stock—			
Stitchless	1.10	"	1.25
Overissue Mag.....	.90	"	1.00
Solid Flat Book...	.80	"	.85
Crumbled No. 1...	.70	"	.75
Ledger White Stock.	1.60	"	1.70
Ledger Stock Colored	1.20	"	1.30
Manila—			
New Env. Cut....	1.70	"	1.80
New Cuttings.....	1.30	"	1.40
Old Kraft Machine Compressed bales..	1.40	"	1.50
News—			
No. 1 White News	1.75	"	1.90
Strictly Overissue..	.70	"	.7[illegible]
Strictly Folded....	.67½	"	.72½
Corrugated	.60	"	.65
No. 1 Mixed Paper..	.45	"	.50

Twines

(F. o. b. Mill)

(Soft Fiber)

Coarse Polished—			
India	.19	@	—
White Hemp	.19	"	—
Fine Polished—			
Fine India.....	.22½	"	—
Unpolished—			
Box	.15½	"	—
Paper Makers.....	.15	"	—
Tube Rope.....	.16	"	—
Wall Paper.....	.18½	"	—
Wrapping	.18½	"	—
Soft Fiber Rope...	.16¾	"	—
Cotton	.24	"	—

(Hard Fiber)

Medium Java.....	.11	"	—
Mex. Sisal.....	.10½	"	—
Manila	.24	"	—

PHILADELPHIA

Domestic Rags (New)

(Price to Mill, f. o. b. Phila.)

Shirt Cuttings—			
New White No. 1.	.07	@	.07¼
New White No. 2.	.03½	"	.04
Light Silesias.....	—	"	.04½
Silesias, No. 1....	—	"	.04
Black Silesias, soft	—	"	.03
New Unbleached..	.06	"	.06¼
Washable Prints...	.02¾	"	.02½
Washable No. 1..	—	"	.01½
Blue Overall.....	.04	"	.04½
Cottons—According to grades—			
Washable shredding	—	"	.01½
Fancy Percales....	—	"	.03
New Black Soft...	.02½	"	.02¾
New Light Seconds	—	"	.04
New Dark Seconds	—	"	1.50
Khaki Cuttings—			
No. 1 O. D.....	.03½	"	.03¾
No. 2 Mixed.....	.01¾	"	.02
Corduroy	.01¾	"	.01½
New Canvas.....	.04½	"	.05
New Black Mixed.	—	"	.02¾

Domestic Rags (Old)

White No. 1—			
Repacked	3.00	@	3.50
Miscellaneous	2.75	"	3.00
Thirds and Blues—			
Miscellaneous	1.35	"	1.50
Repacked	1.55	"	1.65
Black Stockings (Export)	3.50	"	4.00
Roofing Stock—			
Foreign No. 1....	Nominal		
Domestic No. 1...	1.30	"	1.35
Domestic No. 2...	1.10	"	1.15
Roofing Bagging..	1.00	"	1.05

Bagging

(F. o. b. Phila.)

Gunny, No. 1—			
Foreign	Nominal		
Domestic	2.25	@	2.50
Manila Rope.....	—	"	5.50
Sisal Rope.....	2.00	"	2.25
Mixed Rope.....	.75	"	1.00
Scrap—			
No. 1.....	2.55	"	2.75
No. 2.....	—	"	1.50
Wool Tares, heavy..	3.75	"	4.00
No. 1 New Light Burlap	3.00	"	4.00
New Burlap Cuttings	2.25	"	2.50

Old Papers

(F. o. b. Phila.)

Shavings—			
No. 1 Hard White	2.40	@	2.50
No. 2 Hard White	2.10	"	2.15
No. 1 Soft White.	1.90	"	2.00
No. 2 Soft White.	1.60	"	1.75
No. 1 Mixed.....	.90	"	1.00
Solid Ledger Stock..	1.90	"	2.00
Ledger Stock, white.	1.50	"	1.60
Ledger Stock, colored	1.20	"	1.25
No. 1 Books, heavy..	.85	"	.90
Manila Cuttings.....	1.75	"	1.80
Print Manila.....	.50	"	.55
Container Manila....	.40	"	.45
Kraft Paper	1.40	"	1.45
No. 1 Mixed Paper..	.35	"	.40
Straw Board Chip...	.35	"	.40
Binders Board Chip...	.35	"	.40
Corrugated Board...	.55	"	.60
Overissue News.....	.70	"	.75
Old Newspapers.....	.55	"	.60

BOSTON

Old Papers

(F. o. b. Boston)

Shavings—			
No. 1 Hard White	2.90	"	3.00
No. 1 Soft White	2.75	"	2.50
No. 2 Mixed.....	.75	"	.80
Solid Ledger Books..	1.50	"	1.75
Overissue Ledger Stock	1.75	"	2.00
Mixed Ledgers.....	1.50	"	1.75
No. 1 Heavy Books	1.10	"	1.20
No. 1 Books, Light..	.75	"	.85
Crumpled Stitchless Book Stock.....	1.10	"	1.20
Manila Env. Cuttings	1.85	"	2.00
Manila Envelope Cuttings, extra quality	2.35	"	2.60
White Blank News..	1.40	"	1.50
No. 1 Kraft.....	1.25	"	1.30
Extra No. 1 Kraft..	1.45	"	1.50
Mixed Papers.....	.30	"	—
Print Manila	.55	"	.60
Container Manila....	.60	"	.70
Old Newspapers.....	.50	@	.55
Paper Wool Strings.	.95	"	1.10
Overissue News.....	1.00	"	1.10
Box Board Chips....	.40	"	.45
Corrugated boxes....	.50	"	.55
Kraft corrugated boxes	.95	"	1.00
New Kraft Corrugated Cuttings	1.50	"	1.60
Screening Wrappers.	.70	"	.80

Bagging

(F. o. b. Boston)

Gunny Bagging—			
Foreign	3.00	"	—
Domestic	2.80	"	3.00
Sisal Rope.....	2.90	"	3.00
Mixed Rope	.85	"	1.00
Transmission Rope—			
Foreign	2.50	"	2.75
Domestic	2.75	"	2.90
Soft Jute Rope.....	3.50	"	3.75
Manila Rope—			
Foreign	5.25	"	5.35
Domestic	5.50	"	5.75
Jute Carpet Threads	2.00	@	2.25
Bleachery Burlap....	4.00	"	3.25
Scrap Burlap—			
Foreign	2.60	"	2.65
Domestic	2.60	"	2.75
Scrap Sisal.....	2.75	"	3.00
Scrap Sisal for Shredding	2.90	"	3.25
Wool Tares—			
Foreign	2.70	"	2.80
Domestic	2.50	"	2.60
Aust. Wool Pouches.	2.75	"	3.00
New Burlap Cuttings	3.75	"	4.00
Heavy baling bagging	2.75	"	3.00
Paper Mill Bagging..	1.75	"	2.00
No. 2 Bagging.....	.75	"	.80

Domestic Rags (New)

(F. o. b. Boston)

Shirt Cuttings—			
New Light Prints.	—	@	.03
Fancy Percales....	.04	"	.04¼
New White No. 1.	.06¾	"	.07
New Light Flannelettes	.05	"	.05¼
Canton Flannel, Bleached	.0625	"	.0650
Underwear Cutters, Bleached	.06	"	.0625
Silesias No. 1.....	.05	"	—
New Black Silesias..	3.00	"	3.25
Red Cotton Cuttings	.04	"	.05
Soft Unbleached....	.06	"	.06¼
Blue Cheviots.....	.04¾	"	.04½
Fancy	.02	"	.02½
Washable	.02	"	.02½
Cottons—According to Grades—			
Blue Overalls.....	.04¼	"	.04¾
New Black, Soft..	.03	@	.03¼
Khaki Cuttings.....	.02¼	"	.03
O. D. Khaki.....	.02½	"	.03¼
Corduroy	.06¾	"	.07¼
New Canvas.....	.06¾	"	.07¼
B. V. D. Cuttings...	.06½	"	.06¾

Domestic Rags (Old)

(F. o. b. Boston)

White No. 1—			
Repacked	2.75	@	3.75
Miscellaneous	2.40	"	2.60
White No. 2—			
Repacked	1.90	"	2.00
Miscellaneous	2.00	"	2.25
Twos and Blues.....	2.00	"	2.25
Old Blue Overalls...	1.60	"	2.00
Thirds and Blues....	1.50	"	1.75
Miscellaneous	1.25	"	1.35
Black Stockings.....	3.50	"	4.00
Roofing Stock—			
No. 1.....	1.20	"	1.25
No. 2.....	.95	"	1.00
No. 3.....	.85	"	.95

Foreign Rags

(F. o. b. Boston)

Canvas	.04¼	@	—
Dark Cottons.....	(nominal)		
Dutch Blues.....	(nominal)		
New Checks and Blues	(nominal)		
Old Fustians.....	(nominal)		
Old Linsey Garments.	(nominal)		
New Silesias.....	(nominal)		

CHICAGO

Waste Paper

(F. o. b. Chicago)

Shavings—			
No. 1 White Envelope Cuttings ..	3.15	@	—
No. 1 Hard White	2.50	"	2.65
No. 1 Soft White.	2.00	"	2.20
Ledger and Writings	.85	"	.95
Solid Books.....	.95	"	1.10
Blanks	1.50	"	1.60
Krafts	1.40	@	1.50
New Kraft Cuts....	1.60	"	1.75
Overissue News.....	1.00	"	1.10
Old Newspapers—			
No. 1 Folded News	.70	"	.80
No. 1 Mixed Paper	.40	"	.50
Roofing Stocks—			
No. 1.....	.95	"	1.00
No. 2.....	.85	"	.90

A New Idea

The subject of letterhead quantities is having wide circulation in the paper trade under the title of "A New Idea," which may be summarized as follows:

Instead of taking an order for 5,000 or 10,000 letterheads, wouldn't it be possible to get the printer's customer to buy on the basis of 6,000 or 12,000 letterheads?

(1) He would be boosting his sales 20% and be using either a half or a full carton without wastage for 6,000 or 12,000 letterheads.

(2) He would secure full carton price which would net him a saving.

(3) He would be relieved of any odd fractions left on hand if he would try to sell his customers, in turn, on the basis of ordering letterheads in even packaged quantities.

(4) By distributing his initial lock-up and make-ready cost over the larger quantity, he would be able to give his customers a much lower price per thousand.

Harry Londergan to Speak at Boston

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., March 17, 1941—Harry Londergan, director of research of the National Paper Trade Association of the United States, will be the speaker at a meeting of the New England Paper Merchants Association at the Manger Hotel, Monday, April 2. Mr. Londergan will show stereopticon slides of charts he has prepared of financial operations of the paper distributing industry for 1940. A very large attendance is expected because the survey is of considerable interest to the paper merchants.